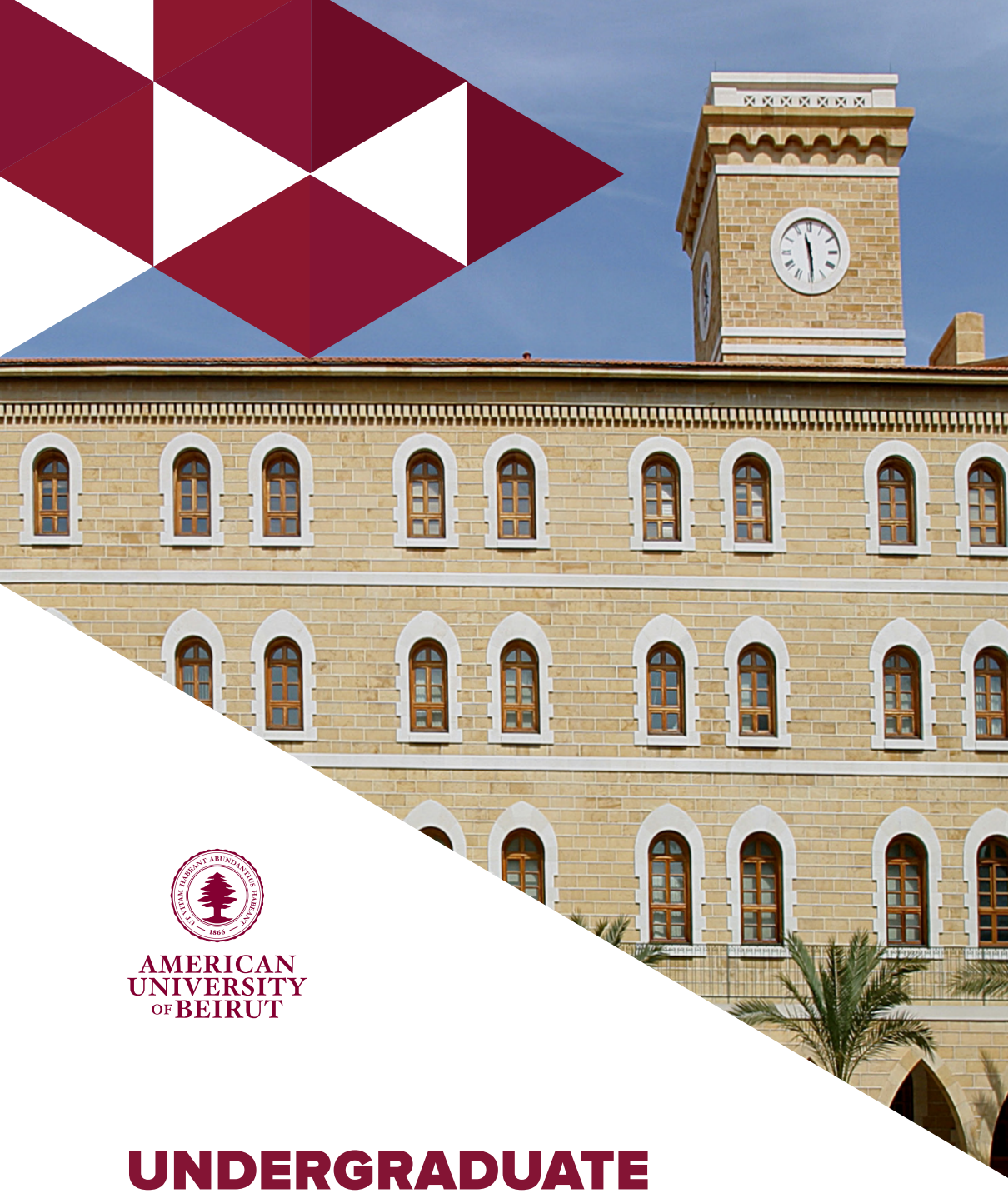

AMERICAN UNIVERSITY OF BEIRUT

UNDERGRADUATE CATALOGUE 2024-25

MSCHE
MIDDLE STATES COMMISSION ON HIGHER EDUCATION

Notice

For information pertaining to graduate programs offered by the various Faculties and Schools at AUB, consult 2024–25 edition of the Undergraduate Catalogue.
Information in this catalogue applies to academic year 2024–25. The university reserves the right to make changes without prior notice in programs, course offerings, academic requirements, and teaching staff as the need arises.

Student Responsibility for Catalogue Information

Students are responsible for reading the information in this catalogue. Failure to read and comply with faculty and university regulations will not exempt students from whatever penalties they may incur.
All students are assigned post office boxes and email addresses. Students are responsible for checking their post office boxes and email regularly for official announcements and information.

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This catalogue and relevant updates can also be viewed at www.aub.edu.lb/registrar.
Additional information about course requirements can be viewed on the online Banner Catalogue available at the AUB webpage.

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Office of the Registrar University Calendar 2024-2025

REGULAR CALENDAR				
EVENT	**Day 1**	**FROM**	**Day 2**	**TO**
Academic year begins for Med. III, and Med. IV	Mon	3-Jun-24		
Registration for Med. III, and Med. IV	Mon	3-Jun-24		
Fee payment for Med. III, and Med. IV	Fri	14-Jun-24	Fri	2-Aug-24
Al-Adha, holiday* No classes	Mon	17-Jun-24	Wed	19-Jun-24
Academic year ends for Med. I	Fri	28-Jun-24		
Confirmation fee payment deadline for new students, Fall 2024-25	Sun	30-Jun-24		
Hijra New Year, holiday* No classes	Mon	8-Jul-24		
Ashoura, commemoration* No classes	Wed	17-Jul-24		
New students orientation (virtual)	Thu	18-Jul-24	Fri	23-Aug-24
Fall 2024-25 Installment Plan Application submission for all current, registered students and for new sophomore/ first-year students	Mon	22-Jul-24	Fri	23-Aug-24
Registration for Med. I students	Fri	9-Aug-24		
Fee payment for Fall 2024-25 current students	Wed	7-Aug-24	Fri	13-Sep-24
Fall 2024-25 Installment Plan Application submission for all old returning, new students coming from abroad, new graduates, new freshman students, and special and transfer students	Wed	7-Aug-24	Fri	23-Aug-24
Registration for Med. II students	Mon	12-Aug-24		
Assumption Day, holiday. No classes	Thu	15-Aug-24		
Academic year begins for Med. I students	Mon	12-Aug-24		
Academic year begins for Med. II students	Mon	12-Aug-24		
Required official document submission deadline for all new students, Fall 2024-25	Fri	16-Aug-24		
Fee payment for Med. I, Med. II, and FM graduate students	Fri	16-Aug-24	Fri	23-Aug-24

International Student Welcome Day (all new degree-seeking and visiting/ exchange students)	Sun	18-Aug-24		
On-Campus New Student Orientation	Mon	19-Aug-24	Wed	21-Aug-24
Visiting and exchange student group advising meeting	Tue	20-Aug-24		
New and old returning student advising	Tue	20-Aug-24	Wed	21-Aug-24
Online course registration for all new and old returning students according to the Registration Guide	Thu	22-Aug-24	Fri	23-Aug-24
FALL Term 2024-25				
EVENT	**Day 1**	**FROM**	**Day 2**	**TO**
Fall 2024-25 term begins for all Faculties/ Schools except the MD program	Mon	26-Aug-24		
Change of schedule for Fall 2024-25 (drop & add)	Tue	27-Aug-24	Fri	30-Aug-24
Fee payment for Fall 2024-25 for new students	Wed	28-Aug-24	Fri	13-Sep-24
Opening Ceremony	Mon	2-Sep-24		
Late fee payment for fall 2024-25 for all students	Mon	16-Sep-24	Fri	20-Sep-24
Prophet's Birthday, holiday* No classes	Mon	16-Sep-24		
Registration cancellation for all students who did not settle their fees or make alternate payment arrangements with the Office of the Comptroller (No Show)	Thu	26-Sep-24		
Deadline for submitting NSSF declaration for the academic year 2024-25	Thu	26-Sep-24		
Financial holds set for all students who did not settle their financial account (Comptroller's Office)	Fri	27-Sep-24		
Spring 2024-25 advising for continuing students	Mon	4-Nov-24	Fri	8-Nov-24
Inter-Faculty/School online transfer applications for Spring 2024-25	Mon	4-Nov-24	Fri	13-Dec-24
Advising and registration for winter session 2025	Thu	7-Nov-24		
Spring 2024-25 online course registration for continuing students	Tue	12-Nov-24	Fri	6-Dec-24

Withdrawal from courses deadline for Fall 2024-25	Fri	15-Nov-24		
Fee payment for the Winter Session 2025	Thu	21-Nov-24	Thu	28-Nov-24
Independence Day, holiday. No classes	Fri	22-Nov-24		
Last day of classes for Fall 2024-25	Thu	28-Nov-24		
Reading Period for Fall 2024-25 **	Fri	29-Nov-24	Mon	2-Dec-24
Founders Day	Mon	2-Dec-24		
Spring 2024-25 Installment Plan Application submission for all current registered students	Tue	3-Dec-24	Fri	17-Jan-25
Fall 2024-25 final examinations	Tue	3-Dec-24	Sat	14-Dec-24
Fall 2024-25 ends for all Faculties/ Schools except the MD program	Sat	14-Dec-24		
WINTER Session 2025				
EVENT	**Day 1**	**FROM**	**Day 2**	**TO**
Winter Session 2024-25 begins	Mon	16-Dec-24		
Change of schedule for Winter 2024-25 (drop & add)	Tue	17-Dec-24		
Grade submission deadline for All Faculties except MD Program for Fall 2024-25	Tue	17-Dec-24		
Christmas and New Year break. No classes	Tue	24-Dec-24	Wed	1-Jan-25
Fee payment for continuing students for Spring 2024-25	Thu	2-Jan-25	Fri	31-Jan-25
Armenian Christmas, holiday. No classes	Mon	6-Jan-25		
Spring 2024-25 Installment Plan Application submission for all old returning, new students coming from abroad, new graduates, new freshman students, and special and transfer students	Tue	7-Jan-25	Fri	17-Jan-25
Required official document submission deadline for all new undergraduate students, Spring 2024-25	Tue	7-Jan-25	Fri	10-Jan-25
Inter-Faculty/School online transfer applications for Fall 2025-26	Tue	7-Jan-25	Fri	11-Apr-25
New Student Orientation (virtual)	Tue	7-Jan-25	Fri	31-Jan-25

Confirmation fee payment deadline for new students for Spring 2024-25	Wed	8-Jan-25		
Withdrawal from courses deadline for Winter 2025	Fri	10-Jan-25		
International Student Welcome Day for all new degree-seeking and visiting/ exchange students	Sun	12-Jan-25		
On-Campus New students orientation	Mon	13-Jan-25	Tues	14-Jan-25
Visiting and exchange group advising meeting	Tue	14-Jan-25		
Winter 2024-25 final examinations	Tue	14-Jan-25		
Spring advising and online course registration for all new students	Tue	14-Jan-25	Wed	15-Jan-25
Fee payment for new students for Spring 2024-25	Thu	16-Jan-25	Fri	31-Jan-25
SPRING Term 2024-2025				
EVENT	**Day 1**	**FROM**	**Day 2**	**TO**
Spring 2024-25 begins for all Faculties/ Schools except MD program	Thu	16-Jan-25		
Change of schedule for Spring 2024-25 (drop & add)	Fri	17-Jan-25	Fri	24-Jan-25
Confirmation fee payment deadline for early-admitted students	Thu	30-Jan-25		
Late fee payment for all students for Spring 2024-25	Mon	3-Feb-25	Mon	10-Feb-25
St. Maroun's Day, holiday.	Sun	9-Feb-25		
Deadline for submitting NSSF Declaration for Spring 2024-25	Fri	14-Feb-25		
Annunciation Day, holiday. No classes	Tue	25-Mar-25		
Eid Al Fitr, holiday*. No classes	Mon	31-Mar-25	Tue	1-Apr-25
Advising for continuing students for Summer 2024-25 and Fall 2025-26	Tue	8-Apr-25	Thu	10-Apr-25
Withdrawal from courses deadline for Spring 2024-25	Thu	10-Apr-25		
Online registration for continuing students for Summer 2024-25	Fri	11-Apr-25	Tue	15-Apr-25
Fall 2025-26 online course registration for continuing students	Wed	23-Apr-25	Fri	8-Aug-25

Latin and Greek Easter vacation	Fri	18-Apr-25	Mon	21-Apr-25
Academic year ends for Med. II	Fri	25-Apr-25		
Classes end for Spring 2024-25 for all Faculties/Schools except the MD program	Sat	26-Apr-25		
Reading Period for Spring 2024-25**	Mon	28-Apr-25	Wed	30-Apr-25
Labor Day. No classes	Thu	1-May-25		
Spring 2024-25 final examinations	Fri	2-May-25	Wed	14-May-25
End of Clinical Clerkships for Med. IV	Sun	4-May-25		
End of Clinical Clerkships for Med. III	Sun	4-May-25		
Required official document submission deadline for all new students, Summer 2024-25	Tue	6-May-25		
Advising and registration for all new students for Summer 2024-25	Tue	6-May-25	Fri	9-May-25
Fee payment for Summer 2024-25 for all students	Mon	12-May-25	Fri	13-Jun-25
Spring 2024-25 ends for all Faculties/ Schools except MD program	Wed	14-May-25		
Grade submission deadline for all Faculties/Schools except MD Program for Spring 2024-25	Sat	17-May-25		
Academic year ends for Med. III and Med. IV	Tue	20-May-25		
Commencement Exercises (Graduate)	Fri	30-May-25		
Commencement Exercises (Undergraduate)	Sat	31-May-25		
SUMMER Term 2024-2025				
EVENT	**Day 1**	**FROM**	**Day 2**	**TO**
Classes begin for Summer 2024-25 for all Faculties/Schools except MD program	Mon	2-Jun-25		
Change of schedule for Summer 2024-25 (drop & add)	Tue	3-Jun-25	Fri	6-Jun-25
Late Payment for Summer 2024-25	Sat	7-Jun-25	Thu	12-Jun-25
Al Adha, holiday* No classes	Sat	7-Jun-25	Mon	9-Jun-25
Academic year ends for Med. I	Fri	27-Jun-25		

Hijra New Year, holiday*	Fri	27-Jun-25		
Ashoura, holiday* No classes	Sun	6-Jul-25		
Withdrawal from courses for Summer 2024-25	Fri	11-Jul-25		
Classes end for all Faculties/Schools except the Faculty of Agricultural & Food Sciences and MD Program	Thu	24-Jul-25		
Reading period for Summer 2024-25 **	Fri	25-Jul-25	Sat	26-Jul-25
Summer 2024-25 final examinations for all Faculties/Schools except the MD program, Faculty of Agricultural and Food Sciences	Mon	28-Jul-25	Sat	2-Aug-25
Classes end for the Faculty of Agricultural & Food Sciences	Thu	31-Jul-25		
Summer 2024-25 final examinations for the Faculty of Agricultural & Food Sciences	Mon	4-Aug-25	Fri	8-Aug-25
Grade submission deadline for all Faculties/Schools except FAFS and MD Program for Summer 2024-25	Wed	6-Aug-25		
Grade submission deadline for FAFS for Summer 2024-25	Mon	11-Aug-25		
Assumption Day, holiday. No classes	Fri	15-Aug-25		

(*) Tentative Dates

(**) The first two days of the reading period may be used for make-up sessions if needed. No final exams may be given during the reading period.

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The University

The American University of Beirut (AUB) is a private, independent, non-sectarian institution of higher learning founded in 1866. It functions under a charter from the State of New York and is governed by a private, autonomous Board of Trustees.

The university has seven faculties: Agricultural and Food Sciences, Arts and Sciences, Health Sciences, Medicine, the Maroun Semaan Faculty of Engineering and Architecture, the Rafic Hariri School of Nursing, and the Suliman S. Olayan School of Business. At present, AUB offers programs leading to Bachelor, Master, MD, and PhD degrees.

The university became co-educational in 1921. The language of instruction is English.

Accreditation and Quality Assurance

Degrees awarded by the American University of Beirut (AUB) are officially registered with the Ministry of Education and Higher Education (MEHE) in Lebanon and with the New York State Education Department (NYSED) in the United States (US). AUB is accredited as an institution by the Middle States Commission on Higher Education (MSCHE) www.msche.org, 1007 North Orange Street, 4th Floor, MB #166, Wilmington, DE 19801, +1 267 284 5011. MSCHE is an institutional accreditor recognized by the United States Secretary of Education. The university was first accredited in June 2004. This accreditation was reaffirmed in 2009, 2014, and 2019. The American University of Beirut – Mediterraneo (AUB Mediterraneo) in Pafos, Cyprus, is approved by MSCHE as a branch campus in 2022. The university's full and updated Statement of Accreditation Status is maintained on the MSCHE website.

Six of AUB's faculties/schools have earned accreditation from professional accrediting agencies as listed below. In many cases, AUB's faculties/schools are the first or the only ones of their kind outside of the US to have programs accredited by US agencies:

The Faculty of Agricultural and Food Sciences' undergraduate Nutrition and Dietetics Coordinated Program (NDCP) was the first and only nutrition and dietetics program in the Middle East to receive US accreditation, in 2013, under the International Dietitian Education program standards by the Accreditation Council for Education in Nutrition and Dietetics (ACEND), which is the Academy of Nutrition and Dietetics' accrediting agency of nutrition education programs. The program secured full reaccreditation, for the maximum allowable time of seven years, in 2017, renewable subject to an upcoming review in 2024.

The Maroun Semaan Faculty of Engineering and Architecture's Bachelor of Engineering (BE) in Civil Engineering, BE in Computer and Communications Engineering, BE in Electrical and Computer Engineering, and BE in Mechanical Engineering were accredited by the Accreditation Board for Engineering and Technology (ABET) in 2010, retroactive to 2008; renewed in 2016 and in 2023. MSFEA's undergraduate programs in Chemical Engineering, Bachelor of Science (BS) in Chemical Engineering and BE in Chemical Engineering, were also accredited by ABET in 2016 retroactive to 2012 and 2013 respectively. This accreditation was renewed in 2023. MSFEA's BE in Industrial Engineering was accredited by ABET in 2023 retroactive to 2020. The Bachelor of Landscape Architecture (BLA) program was accredited by the Landscape Architectural Accreditation Board (LAAB) in 2021.

The Public Health Program (PHP) at **the Faculty of Health Sciences** received its initial accreditation in 2006 from the Council on Education for Public Health (CEPH), an independent agency recognized by the US Department of Education that accredits schools of public health and public health programs. In 2012, the program was reaccredited for a seven-year term. In December 2019, the CEPH Board voted to renew the accreditation of the program for another seven-year term, ending in 2026. The accredited PHP includes the Bachelor of Science in Environmental Health, Bachelor of Arts in Health Communication, Master of Public Health, Master of Science in Epidemiology, Master of Science in Environmental Sciences—major Environmental Health, and the PhD in Epidemiology. The PHP at FHS was the first to be accredited by CEPH outside the Americas and remains the only CEPH-accredited program in the Arab region. Internationally, it is one of only three non-US PHPs to hold CEPH accreditation. This has allowed FHS to become a full member of the Association of Schools and Programs of Public Health and to join the Delta Omega Honorary Society in Public Health, which are recognitions of academic excellence limited to CEPH-accredited schools and programs.

The Faculty of Medicine was granted full accreditation effective January 1, 2019, for a period of six years by the Association for Evaluation and Accreditation of Medical Education Programs (TEPDAD) International Medical Education Accreditation Council, the authorized medical school accrediting body of the World Federation for Medical Education (WFME) based in Turkey. This accreditation places FM in compliance with the requirements of the Educational Commission for Foreign Medical Graduates. The Faculty of Medicine received institutional accreditation from the Accreditation Council for Graduate Medical Education-International (ACGME-I) in 2015. Currently, 18 residency programs are ACGME-I accredited: Anesthesiology, Dermatology, Diagnostic Radiology, Emergency Medicine, Family Medicine, General Surgery, Internal Medicine, Neurology, Neurosurgery, Obstetrics & Gynecology, Ophthalmology, Orthopedic Surgery, Otorhinolaryngology, Pediatrics, Plastic Surgery, Psychiatry, Radiation Oncology, and Urology.

The Rafic Hariri School of Nursing became the first nursing school outside American territories to have its baccalaureate and master's degree programs accredited by the Commission on Collegiate Nursing Education, 655 K Street NW, Suite 750, Washington, DC 20001, +1 202 887 6791 initially in 2007 (reaccredited in 2012). The Bachelor of Science in Nursing program (BSN) and Master of Science in Nursing (MSN) programs were reaccredited for 10 years effective March 7, 2022.

The Suliman S. Olayan School of Business (OSB) is accredited by the Association to Advance Collegiate Schools of Business (AACSB International). It was the first school of business in Lebanon to earn this accreditation in 2009 (reaffirmed in 2014 and 2019). OSB boasts a portfolio of AACSB accredited programs that include the following: Bachelor in Business Administration, Master in Business Administration, Online Master in Business Administration, Executive Master in Business Administration, Master in Finance, Master in Human Resource Management, and Master in Business Analytics (MSBA). In September 2022, the programs offered at the American University of Beirut – Mediterraneo (Bachelor in Business Administration–Management and Master in Business Analytics) were included among the accredited programs.

Mission Statement

The American University of Beirut (AUB) is an institution of higher learning founded to provide excellence in education, to participate in the advancement of knowledge through research, and to serve the peoples of the Middle East and beyond. Chartered in New York State in 1863, the university bases its educational philosophy, standards and practices on the American liberal arts model of higher education. The university believes deeply in and encourages freedom of thought and expression and seeks to foster tolerance and respect for diversity and dialogue. Graduates will be individuals committed to creative and critical thinking, lifelong learning, personal integrity, civic responsibility and leadership.

History

The American University of Beirut was established as the Syrian Protestant College in 1866. The college opened with its first class of 16 students on December 3, 1866. Throughout its history, the university has expanded and developed new faculties and programs. In 1867, the university started the School of Medicine. Four years later, in 1871, it added both a school of pharmacy and a preparatory school. The latter became independent in 1960 and is now known as International College. The opening of the hospital (currently the American University of Beirut Medical Center) in 1905 was followed by the establishment of a school of nursing (named the Rafic Hariri School of Nursing in 2008). In the early 1950s several new programs were introduced. The Faculty of Engineering and Architecture (named the Maroun Semaan Faculty of Engineering and Architecture in 2017) was established in 1951; the Faculty of Agriculture (now the Faculty of Agricultural and Food Sciences) opened its doors in 1952; and the School of Public Health (now the Faculty of Health Sciences) was started in 1954. In 2000, the university, which had been offering business education since 1900, established an independent school of business (named the Suliman S. Olayan School of Business in 2003) as its sixth faculty. AUB celebrated its 150th anniversary in 2016. The Rafic Hariri School of Nursing became AUB's seventh faculty in 2018. On September 6, 2023, AUB welcomed the first cohort of 53 students to the American University of Beirut – Mediterraneo (AUB Mediterraneo) in Pafos, Cyprus, AUB's first twin campus outside Lebanon.

The number of degrees and diplomas that AUB has awarded to date totaled 106,436.

FORMER PRESIDENTS

Peter F. Dorman 2008-15
John Waterbury 1997-2008
David S. Dodge 1996-97
Robert M. Haddad 1993-96
Frederic P. Herter 1987-93
Calvin Plimpton 1984-87
Malcolm H. Kerr 1981-84
Harold E. Hoelscher 1977-81
Samuel B. Kirkwood 1965-76
Norman Burns 1961-65
J. Paul Leonard 1957-61
Stephen B.L. Penrose, Jr. 1948-54
Bayard Dodge 1923-48
Howard S. Bliss 1902-20
Daniel Bliss 1866-1902

Also Served:
Makhlouf Haddadin (acting) 2015
George Tomey (deputy) 2006
Samir Makdisi (acting deputy and
then deputy) 1993-98
Makhlouf Haddadin (acting deputy) 1992-93
Ibrahim Salti (deputy) 1987-93
Lutfi Diab (acting) 1986-87
Raja N. Khuri (acting) 1985-86
Samir K. Thabet (acting) 1984
David S. Dodge (acting) 1981-82
James Cowen (interim) 1976-77
Constantin K. Zurayk (acting) 1954-57
Edward F. Nickoley (acting) 1920-23

Non-Discrimination Notice

AUB encourages a diverse student body and workforce, and is committed to the principle of equal opportunity in education and employment. Consistent with this commitment and with Lebanese, U.S., and other applicable laws, it is the policy of AUB not to tolerate discrimination or discriminatory harassment including sexual harassment, and to provide those who feel they are victims of discrimination, discriminatory harassment, and sexual harassment with mechanisms for seeking redress as described in AUB policies and procedures.

Inquiries or complaints regarding discrimination, discriminatory harassment, or sexual harassment may be addressed to the Title IX Coordinator titleix@aub.edu.lb, Office of the President, College Hall, telephone +961-1-350000 ext. 2514.

For AUB's policies and procedures, visit www.aub.edu.lb/titleix.

Admissions

Undergraduate

The American University of Beirut seeks students of sound character and demonstrated academic achievement and promise. In accordance with the policies of its founders and with its policy of equal opportunity, the university admits students regardless of race, color, religion, gender, disability or national origin. While it attracts students from more than ninety countries around the world, AUB primarily serves applicants from Lebanon, the Arab world, and other countries in the Middle East, and seeks to maintain geographic distribution within the region. The university values its strong ties with its alumni and considers the attendance of alumni children important to the maintenance of these ties and to the continuation of its traditions.

Application Procedures

Applications can be submitted online : https://join.aub.edu.lb/apply/ or through CommonApp at https://www.commonapp.org/apply.

Admission to Undergraduate Study

Students may apply for admission to AUB's four-year undergraduate program as:

- Freshmen in the Faculty of Arts and Sciences,
- Sophomores/first-year professional students in all the faculties,
- Transfer students from other universities,
- Visiting students, or non-degree students,
- Second-degree applicants.

The Executive Admission Committee is in charge of issuing admission decisions on freshman, sophomore, transfer to sophomore, and visiting/non-degree applications. The selection of transfer students to advanced standing or those applying for a second degree is made by the respective faculties/schools.

All admission decisions are conditional upon evidence of the student having received the certificate or degree (recognized by the Ministry of Education of the originating country) on the basis of which admission is sought and based on evidence of having fulfilled the Readiness for University Studies in English (RUSE). A student is not eligible to register until all conditions of her/his admission are met. Conditions are stated in the letter of admission's checklist.

Students applying for entrance in the fall term are notified of conditional admission by early April. Applicants for the spring term are notified by mid-January. Upon notification of conditional admission, a student can hold a place for the fall term by making a non-refundable enrollment deposit as listed in the letter of admission. This deposit is credited to the student's account upon registration.

Students applying as undergraduates should submit the items listed above by the appropriate deadline.

Note: Recommendations, official transcripts of records, and all other documents presented to complete an application for admission are the property of AUB and are not returned to applicants.

Applicants for the Freshman Year

Freshman applicants may apply for admission to AUB's four-year undergraduate program in the Faculty of Arts and Sciences. They may apply for entrance in the first (fall) term or in the second (spring) term. Those applying for the fall term may opt to apply under a special early admission plan. All applications should be submitted online by the deadlines specified below.

Candidates for the freshman year are judged primarily on the basis of:

- Their academic record (school grades 10 and 11).
- The results of their SAT.
- The Secondary School Record: Official report of grades, including average and rank in class for the two years of schooling prior to the year in which the student is filing the application. Schools that do not provide complete information, particularly average and rank in class, may jeopardize the admission of their students. Applicants should ask officials of the school they have attended over the last two years to send their school grades directly to the AUB Office of Admissions.
- SAT: The SAT is required of all undergraduate applicants except junior and senior transfer students, and non-degree and visiting students. Each student is responsible for registering and taking the SAT.Applicants planning to enroll during the spring term must take the test by the October testing session of the previous year of their planned enrollment. Students applying for the fall term must take the SAT by the December testing session of the previous year of their planned enrollment. For students who take the test more than once, the university considers the highest score achieved in each of English and Math sections. Students should make sure to submit their official SAT scores through college board by entering the AUB code, 0902 before admission decisions are issued. For details on the dates and locations of the SAT, contact

  College Board (https://www.collegeboard.org/sat). When registering for the SAT, applicants must enter the AUB code, 0902, and ask College Board to send the scores directly to the Office of Admissions. Students should make sure the results of their last test will be out before admission decisions are issued. AUB will only accept scores received by College Board.
- Applicants to the freshman class are required to present "permission" to enter the freshman class from the Equivalence Committee of the Lebanese Ministry of Education and Higher Education (*MEHE) and are required to take the SAT. Students admitted to the freshman year are not classified as freshman sciences or Arts. However, the Equivalence Committee at (MEHE) Classifies the freshman students into two tracks: Sciences and Arts. A minimum SAT score of 950 for the sciences track, and a minimum of 870 for the arts tracks is required prior to entering the freshman program.
- A scanned copy of the applicant's identity card or passport.
- An application will not be processed without the settlement of a non-refundable fee of $50.
- Important note:
- Applicants who are pursuing a high school program will only be accepted to the Freshman class, if admissible, even if they present a Lebanese Baccalaureate diploma.
- Once a student has been enrolled in the freshman class and has completed at least one semester, he/she may not switch to sophomore, even if he/ she has presented the equivalency of his/ her Government Secondary Certificate from MEHE. Students enrolled in the freshman class need to complete the 30 required freshman credits to be eligible to move into the sophomore class.

Applicants to the Sophomore Year and All Other Undergraduate Programs

Sophomores/ first-year professional students may apply for admission to AUB undergraduate programs in all the faculties. They may apply to one, two or three of AUB's faculties /schools. Applicants for the fall term may apply under a special early admission plan. Sophomore and other undergraduate applicants—transfer students from other universities, visiting students, non-degree students, and second-degree applicants— may apply for entrance in the first (fall) term or in the second (spring) term. All applications should be submitted online by the deadlines specified below.

Candidates for the sophomore and other undergraduate programs are judged primarily on the basis of:

- Their academic record (school grades 10 and 11).
- The results of their SAT.
- **The School Record**: The official report of grades (10 and 11) for the two years of schooling prior to the year in which the student is filing the application, including average and rank in class. Schools that do not provide complete information, particularly average and rank in class, may jeopardize the admission of their students. Applicants should ask officials of the school they have attended the over last two years to send their school grades directly to the AUB Office of Admissions.
- SAT: The SAT is required of all undergraduate applicants except junior and senior transfer students, and non-degree and visiting students. Each student is responsible for registering and taking the SAT. Applicants planning to enroll during the spring term must take the test by the October testing session of the previous year of their planned enrollment. Students applying for the fall term must take the SAT by the December testing session of the previous year of their planned enrollment. For students who take the test more than once, the university considers the highest score achieved in each of English and Math sections. Students should make sure to submit their official SAT scores through college board by entering the AUB code, 0902 before admission decisions are issued. For details on the dates and locations of the SAT, contact College Board (https://www.collegeboard.org/sat). When registering for the SAT, applicants must enter the AUB code, 0902, and ask College Board to send the scores directly to the Office of Admissions. Students should make sure the results of their last test will be out before admission decisions are issued. AUB will only accept scores received by College Board.
- An application will not be processed without the settlement of a non-refundable fee of $50.

Deadlines for All Undergraduate Applications

For regular admission to:	**Deadline**
Spring term of academic year 2024-25	October 31, 2024
Fall term of academic year 2025-26	December 20, 2024
Spring term of academic year 2025-26	October 31, 2025
For early/merit admission to:	**Deadline**
Fall term of academic year 2025-26	October 31, 2024

Readiness for University Study in English (RUSE)

Prior to registration at the university, undergraduate students admitted to AUB must demonstrate a level of English proficiency consistent with the demands of a program carried out almost exclusively in the English language. This should be done as early as possible (but no later than the end of July). This can be done by submitting official test scores for either of the following tests: The AUB English Entrance Examination (AUB EN), Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or SAT English section. Updated scores to meet the RUSE could be found on the following URL:
https://www.aub.edu.lb/admissions/Pages/EnglishRequirements.aspx

Applicants who score lower than those listed in the URL above. In such cases, the applicants will be required to take remedial or intensive English language courses upon starting their degree programs, as per the URL above.

Upon registering for these tests, applicants must specify that results be sent to the AUB Office of Admissions. The applicant must also send a scan of the results to admissions@aub.edu.lb.

Information and application forms for the TOEFL can be requested from:

AMIDEAST	
Riad El Solh, Bazerkan Building	6155 Beirut, LEBANON
Email: Lebanon@AMIDEAST.org	
Website: www.AMIDEAST.org	

Applicants who take the TOEFL must use the institutional code number for AUB, 0902, when registering for the test.
For information pertaining to IELTS, applicants should contact the British Council in their respective countries.

Remedial/Intensive English Courses

Applicants who obtain scores lower than the ones required to meet RUSE must register in a remedial/intensive English course. Placement in these courses is determined by the Communication Skills Program according to the criteria detailed on
https://www.aub.edu.lb/fas/english/Commskills/Pages/Placement.aspx

Students enrolled in a remedial/intensive English course will not receive credits toward their degree. Those students may register for only one or two regular university courses (a maximum of 6 credits), thus earning credits toward a degree while working on achieving the level of English needed for carrying a full course load in the regular program.

Such courses are restricted to Arabic and mathematics/statistics/computer literacy courses (maximum 6 credits) in the Faculty of Arts and Sciences and equivalent courses in statistics in the Faculty of Agricultural and Food Sciences, the Suliman S. Olayan School of Business, and the Faculty of Health Sciences.

Students can spend one or two terms in remedial/intensive English courses, depending on their level of English language proficiency at the time of entry. **However, a student who fails to pass the remedial/intensive English course by the end of the second term loses her/his admission to the university.**

Regular attendance in a remedial/intensive English Regular attendance in a remedial/ intensive English course is expected due to their intensive nature. Continued class absence may result in a recommendation that the student lose her/his admission to the university.

University Preparatory Program

The University Preparatory Program (UPP) is designed for students who have completed the high school/Baccalaureate II/or other secondary school diploma (based on 12 years of schooling starting with Elementary one class) and who have a limited formal background in English. The 20-hour-per-week English curriculum stresses an integrated approach to listening, reading, writing and speaking. Study skills, pronunciation and research skills are incorporated into the course, which is especially tailored to meet students' needs. An additional 6 hours of mathematics and/or science is given to ensure that students are prepared for university work.

It is recommended that students live on campus in one of AUB's all-men or all-women residence. Residence is a mean of fostering an "immersion approach" to language learning, giving students the opportunity to practice their English language skills outside the classroom.

Besides the residence/boarding experience, students have the opportunity to participate in regular AUB extracurricular activities and a series of field trips planned in conjunction with coursework.

Students enrolled in the UPP are accepted into the freshman class at AUB after taking an exit exam fulfilling the requirements set by the Program; and taking the SAT exam to meet the minimum requirements set by the Lebanese Ministry of Education and Higher Education (Refer to the above section 'Applicants for the Freshman Year'); students applying to the sophomore class need to take the SAT and go through the normal admission procedure for regular students.

Early/Merit Admission

A special early admission plan for fall admission has been designed for students who fulfill the following requirements:

- Submission of application form by end of October 31.
- Class rank in the top 25 percent in each of grades 10 and 11.
- SAT scores (last session considered is the October session), as per the below table:

Applying to	**Minimum SAT**
Freshman	**1100**
Faculty of Arts and Sciences	
Bachelor of Arts Programs (humanities/ social sciences)	1170
Bachelor of Arts in Economics	1270
Bachelor of Sciences (quantitative thought and natural sciences)	1270
Bachelor of Sciences in Biology	1350
Hariri School of Nursing	**1170**

Faculty of Agricultural and Food Sciences	**1270**
Faculty of Health Sciences	**1270**
Suliman S. Olayan School of Business	**1270**
Maroun Semaan Faculty of Engineering and Architecture	
Bachelor of Fine Arts in Graphic Design	1270
Bachelor of Landscape Architecture	1270
All Engineering Programs	1350

Early Admission decisions are issued by the end of January and admission **is granted only to the first choice of major in each of the faculties applied for.**

Example: An early admission applicant has applied to a BS in Biology as his first choice and a BA in Psychology as his second choice. If the applicant was not eligible for the BS in Biology as per the early admission criteria, the second choice, which is BA in Psychology, will be transferred and assessed during the regular admission pool.

Admission is conditional upon the student receiving the certificate or diploma (recognized by the Ministry of Education of the originating country) on the basis of which admission was sought and on evidence of having fulfilled the Readiness for University Studies in English (RUSE). Students may not register until these conditions are met. Applicants who apply early but are not granted early admission are automatically placed in the pool of all other applicants to the same level and same faculty/school, and are given equal consideration. Decisions are issued by early April.

Applicants for early admission may benefit from early action if they have excellent academic records but are missing one of the class rank requirements.

Applicants for early admission may benefit from early decision if they have excellent academic records but their school does not provide class rank.

Early action and early decision admissions are subject to capacity and budget availability. Admission to early admission, early action and early decision are granted to the accepted programs only, in those categories indicated in the admission letter.

Merit scholarships are offered only during the Fall terms.

Applicants who wish to defer their enrollment from Fall to Spring, and who have been granted the merit scholarship need to settle the confirmation fee prior to deferral.

This Merit Scholarship covers the above stated percentage of the tuition fees over the entire period of the sophomore study, provided the student maintains a minimum GPA of 3.5 per semester during the first year and the years to follow.

Transfer from Other Universities

Students enrolled at a recognized institution of higher learning may apply for transfer to the sophomore/first year professional level of any of the faculties /schools if they have completed a class equivalent to that of the freshman class of the Faculty of Arts and Sciences at AUB.

Admission in the above-mentioned cases is based on the SAT, and school and university grades and applications should be submitted by the deadlines set for sophomore applications.

Transfer applicants to the advanced standing (i.e., those who have completed the 24 sophomore credits or equivalent at AUB (as a non-degree student with a minimum GPA of 3.0/4) or other recognized institutions of higher learning) do not need to submit SAT results. All transfer applicants should consult the appropriate faculty sections of the catalogue, taking particular note of the residence requirement and any particular admission requirements of that faculty. All admitted transfer applicants must submit the most recent transcript of their grades and must fulfill the Readiness for University Studies in English (https://www.aub.edu.lb/admissions/english) before registration.

Transfer applicants also need to submit their official grade 12 transcript along with their Government Secondary Certificate or its equivalent.

All transfer applicants need to submit the syllabi of the courses for which they expect to receive credit at AUB to the Office of Admissions before April 30 if applying for the fall term. The deadline for receipt of additional missing syllabi is May 30, after which no equivalence will be given for courses. Transfer applicants for the spring term are required to submit the syllabi of the courses by November 15.

Courses of suitable academic standard and in recognized academic disciplines that have been satisfactorily completed at other institutions are given transfer credits only (not grades) pending review by the relevant departments and faculties at AUB. Credits alone may be transferred; grades are not transferable.

Admission to Second Degree

Students already holding an AUB bachelor's degree for more than two years and wishing to obtain a second bachelor's degree in the same faculty or in another faculty must apply through the Office of Admissions for a second-degree application. This category will be exempted from SAT and Readiness for University Studies in English (RUSE).

Students holding a bachelor's degree from an accredited institution of higher education recognized by AUB can apply for a bachelor's degree major different from the first degree.

The faculty/school Admissions Committee evaluates all applications for a second degree and makes recommendations to the dean of the concerned faculty/school. All final admission decisions depend on the overall qualifications of the eligible applicant pool and the number of available places for the term in question.

Credit for University Work Done at the Secondary Level

With approval of the academic departments concerned, a maximum of 15 freshman credits may be given for high grades on Advanced Placement (AP) examinations of the College Board https://ap.collegeboard.org/. The AP results must be sent to the office of admissions for processing and then transferred to the Registrar's office for crediting.

Admission of Non-Degree Students

Persons enrolled at recognized universities other than AUB (or who have completed some coursework —at least one term or 12 credits —at other universities) and who have a recognized secondary school diploma, or the equivalent , may apply to take up to 17 credits per term at the undergraduate level in any faculty for the fall term (by end of June, rolling till one month prior to the beginning of classes) or for the spring term (by mid-November, rolling till one month prior to the beginning of classes), using an application available from the Office of Admissions. Admission is normally offered for two terms if the student is joining AUB

starting fall or for one term if starting in spring (registration may be extended to another term depending on course offerings and achievement in courses taken at AUB upon submission of a petition to this effect). Courses successfully completed at AUB by a non-degree student not working for a degree may be considered for credit toward an AUB degree if the student subsequently applies for degree candidacy through the regular admission process and is admitted to it. Students whose native language is English, or who have completed two years of higher education in a university in which English is the primary language of instruction, are exempted from the Readiness for University Studies in English registration (https://www.aub.edu.lb/admissions/english) for more information on RUSE.

Admission as a Visiting (Exchange) Undergraduate Student

This category applies to students who are studying abroad or as part of an exchange program. Applicants must be students at other recognized institutions of higher learning having completed at least the sophomore year or its equivalent at their home universities. Applications should be submitted to the Office of Admissions along with the degree and transcript of record by end of March if applying for fall or end of October if applying for spring. Applicants should specify their intended course of study during their visiting status. Admission is offered normally for two terms if the student is joining AUB starting fall or for one term if starting in spring (registration may be extended to another term depending on course offerings and achievements in courses taken at AUB upon submission of a petition to this effect). Students whose native language is English, or who have completed two years of higher education in a university in which English is the primary language of instruction, are exempted from the Readiness for University Studies in English registration (https://www.aub.edu.lb/admissions/english) for more information on RUSE.

Admission of University Employees

Employees of the university who meet at least minimum undergraduate admission requirements are given admission by the director of Admissions as part-time students. Such applicants must take the SAT within the set deadlines and must meet the Readiness for University Studies in English (see page 32) prior to registration. Employees who leave the service of AUB and wish to continue their education at the university must apply for admission in competition with other applicants.

Admission to the Summer Session

Candidates who are not registered at AUB but who wish to join only the summer session must submit their applications before May 1, must hold a recognized secondary school certificate, must be enrolled at a recognized university, and must meet the Readiness for University Studies in English (see certificate and class chart section). The Director of Admissions evaluates such applications and decides on the admission or non-admission of these applicants. Currently registered students need not complete an application for admission to the summer session.

Readmission

The following factors govern students seeking readmission:

- Students in good standing who withdrew voluntarily and who have left the university for more than two years must submit the readmission petition (readmission form) available online (https://epetitions.aub.edu.lb) to the concerned Faculty Dean's Office and must receive readmission approval from the office of admissions.

Students who have left the university for less than two years and/or students who left the university on probation refer to the Reactivation section under the General University Academic Information section of the catalogue.

Deferred Registration of Admitted Students

Undergraduate applicants who are offered admission for the fall term and who do not register for that term may be eligible for admission to the spring term of the same academic year, pending availability of places. An email petition should be submitted to the Office of Admissions prior to January 13, 2025.

Students who enroll in other institutions of higher learning are not eligible for such accommodation; they will be assessed as transfer applicants.

Applicants who have been admitted to the fall term in two different faculties, and who actually register in one of these, must petition the Office of Admissions prior to January 13, 2025, if they intend to use their second admission. Admission to the second faculty depends on availability of places.

Requirements of Admitted Students for Registration

Students admitted to AUB are required to meet several requirements prior to registering at the university. These include a medical examination, the Readiness for University Studies in English (RUSE), and evidence of having received the diploma, certificate, degree or level of university education on the basis of which the student applied and admission was granted. The RUSE may be met in a variety of ways, as outlined under the RUSE section. The diploma/certificate requirement may also be met in a variety of ways, which in turn determines the faculty and level to which a student applies, is admitted, and may register at the university.

Secondary School Certificate/Diploma Requirements for Registration and the Classes for Which They Qualify

All applicants to the freshman class must hold a secondary school certificate awarded either by a public or private school. The certificate must be recognized by the Lebanese Ministry of Education and by AUB. The university does not recognize secondary diplomas or certificates that are based on fewer than 12 years of schooling, starting with grade one (Elementary I Class). For example, the GCE ordinary level and one year of the College d'Enseignement Général et Professionel (CEGEP) do not qualify for admission to AUB.

Applicants to the freshman class may have followed a high school diploma program that fulfills the above criteria. In such cases, a student must obtain permission from the Equivalence Committee of the Lebanese Ministry of Education allowing them to pursue their higher education on the basis of a foreign (non-Lebanese) program. Applicants are advised to begin the process of securing this permission at least two months prior to the time set for registration at AUB.

This permission can be obtained by applying to the Equivalence Committee of the Ministry of Education.

- Applicants must provide evidence of having lived and studied outside Lebanon

for at least two years. Evidence normally consists of proof of legal residence in a foreign country and the official records of grades from two years of secondary education in that country.
- If the years of study abroad took place at the elementary level, then proof of legal residence and school grades should cover three years.
- Applicants must provide a photocopy of their passport or Lebanese ID.
- Applicants must also provide official score reports for the required SAT.

The Equivalence Committee of the Lebanese Ministry of Education requires applicants to the freshman class, given that they have received permission to pursue higher education on the basis of a foreign program, to take the SAT.

At the time of registration for the freshman class, students should check with their advisors to ensure that the number of credits and types of subjects taken during their freshman year are in compliance with the specifications of the Equivalence Committee of the Lebanese Ministry of Education.

The total score of the combined SAT Evidence-Based Reading and Writing and Mathematics, must be at least 950 for the Sciences track and at least 870 for the Arts track.

Upon completion of the freshman class at AUB, Lebanese students who have secured this permission are entitled to have their freshman class equated to the Lebanese Baccalaureate by the Equivalence Committee of the Ministry of Education. Students must provide evidence of having received the Lebanese Baccalaureate, or its equivalent, for promotion to the sophomore class or equivalent classes in other faculties/schools.

All applicants for admission to the sophomore class, or to the equivalent classes in other faculties, should hold the Lebanese Baccalaureate or its equivalent, as recognized by the Lebanese Ministry of Education and by the university.

Applicants who hold certificates that are equivalent to the Lebanese Baccalaureate are entitled to consideration for admission to the university, but the class to which such equivalent certificates may permit admittance depends on the certificate itself.

Candidates admitted to the university as non-Lebanese are not permitted to change their nationality to Lebanese in the records of the university unless the requirements for admission of Lebanese students were fulfilled at the time of admission to the university.

Admitting Certificates and the Classes for Which They Qualify

Lebanese Baccalaureates

There are four types of Lebanese baccalaureates: literature and humanities, sociology and economics, general sciences, and life sciences. Please see Page 40, for respective pages per type. In additional to the four types, there is also the technical baccalaureate permits admission to programs that are similar in nature to the area of concentration of the particular technical baccalaureate.

Certificates Issued by Governments

Other government secondary certificates entitle their holders to apply to the freshman class in the Faculty of Arts and Sciences or to the sophomore or equivalent classes in the other faculties.
Some government certificates are divided into categories of literary and scientific certificates.

A literary certificate generally qualifies for consideration of admission to arts or business. However, students with a literary certificate may apply to a science major. Those students are given additional prerequisite courses required for the science major. A scientific certificate qualifies for consideration of admission to all majors (see certificate and class chart section).

Some systems of education do not distinguish in their secondary certificates among literary, scientific or other types of certificates, but indicate the subjects passed. The applications of holders of such certificates are evaluated on a case-by-case basis by the Unified Admissions Committee. The university requires certain certificates to show passes with credit standard. Certificates that do not meet this standard are not considered.

Commercial, Agricultural and Vocational Secondary Certificates

These certificates are generally not considered for admission to AUB. If, however, the issuing government recognizes the certificate to be equivalent to the official (governmental) secondary school certificate, a student will be eligible for admission consideration. The class and programs to which such certificates admit depends on the area of concentration of the certificate.

Technical Baccalaureate

Student who are completing a technical baccalaureate, need to enroll in the program which falls under the same track and will need to take up to 15 freshman credits as per the MEHE decree 779/ 2013. Upon confirmation, the student needs to contact the student services section in his/ her Faculty/ school and make sure to register for the pre-requisite courses during his/her first term.

Informal Education Preparation

Requirements of formal education for admission to the freshman class may be waived for applicants who have passed their 25th birthday. Such applicants must, however, meet the specific requirements established by the university committee on admissions.

Certificate and Class Chart

The following chart provides information about the types of certificates and the classes to which such applicants may be admitted. In all cases the SAT I (mathematical reasoning, verbal reasoning) must be taken by the deadline, and the Readiness for University Studies in English must be met.

The abbreviations used in the chart are as follows:

Please note that the abbreviations listed are NOT the course codes used in the course listings or descriptions, but rather a guideline for use in the following charts.

Agri	= Agricultural and Food Sciences	GD	= Graphic Design
Arch	= Architecture	HS	= Health Sciences
Biol	= Biology	Math	= Mathematics
Chem	= Chemistry	Nurs	= Nursing
CmpS	= Computer Science	PtSt	= Petroleum Geosciences
Eng'g	= Engineering	Phys	= Physics
Eng	= English	SB	= School of Business
FAS	= Faculty of Arts and Sciences	Soph	= Sophomore
Fr	= Freshman	Stat	= Statistics
Geol	= Geology		

Certificate	**Class and department to which the certificate permits admittance**
High School Diploma or Secondary School Leaving Certificate, based on at least twelve years of schooling starting with Elementary I Class Students with high grades on certain advanced placement (AP) examinations of the College Board may apply for freshman course credit in those subjects (see page 33)	Freshman or Nursing I
Government Secondary Certificates (literary or scientific), including the German Abitur and the Diplome d'Etudes Collegiales (DEC) based on two years of the CEGEP Program	Freshman or Nursing I

Students who successfully complete the freshman class are promoted to the sophomore class in the Faculty of Arts and Sciences, or may seek admission to the equivalent classes in other faculties. These equivalent classes are the first year in the Faculty of Agricultural and Food Sciences, the first year in the Suliman S. Olayan School of Business, the first year in the Faculty of Engineering and Architecture, the first year in the Faculty of Health Sciences, and the second year in the Rafic Hariri School of Nursing. Students admitted to the freshman class are urged to consult with their advisors to familiarize themselves with the requirements for admission to the majors offered by the various faculties of the university.

Government secondary certificates (literary or scientific), including the German Abitur and the Diplome D'Etudes Collegiales (DEC) based on two years of the CEGEP program, the French Bacc. GCE and IB

1. **Government secondary school certificates (including French and Lebanese Bacc. General Sciences and Life Sciences)** qualify the holder for admission to all majors in the sophomore class in the Faculty of Arts and Sciences and to equivalent classes in the other faculties.

2. **Government secondary school certificates (including French and Lebanese Bacc. Literature & Humanities)** may be required to take additional courses if applying to majors where some science or math is needed (9 credits of freshman level Natural Sciences and 6 credits of freshman level Mathematics at the Faculty of Arts and Sciences before joining their major if applying to the Maroun Semaan Faculty of Engineering and Architecture). Information on additional required courses may be obtained from the appropriate department/faculty section in this catalogue.

3. **International Baccalaureate (IB), French Baccalaureate (FB) and General Certificate Of Education (GCE) Requirements**

The table below summarizes what students must take in the International Baccalaureate (IB), the French Baccalaureate (FB), and the General Certificate of Education (GCE) to join specific majors at AUB *without having to take any remedial courses.* Students who have not taken the material corresponding to a specific major *may still join that major.* However, they may be required to take additional remedial courses at AUB.

Faculty	Major	IB	FB	GCE
FAFS	Agribusiness	Math SL or HL	Mathematics (1ere + complementaire or terminale)	Math AS Level with Pure Math 2 or A Level
	Agriculture	Chemistry SL or HL Math SL or HL Biology SL or HL	Physics & Chemistry (1ere) Mathematics (1ere + complementaire or terminale) Biology & Earth Sciences (1ere + terminale)	Chemistry AS Level or A Level Math AS Level with Pure Math 2 or A Level Biology AS Level or A Level
	Food Science and Management	Chemistry SL or HL Math SL or HL Biology SL or HL	Physics & Chemistry (1ere) Mathematics (1ere + complementaire or terminale) Biology & Earth Sciences (1ere + terminale)	Chemistry AS Level or A Level Math AS Level with Pure Math 2 or A Level Biology AS Level or A Level
	Nutrition and Dietetics	Chemistry SL or HL Biology SL or HL	Physics & Chemistry (1ere) Biology & Earth Sciences (1ere + terminale)	Chemistry AS Level or A Level Biology AS Level or A Level
FAS	Applied Mathematics	Math HL	Mathematics (1ere + terminale)	Math A Level
	Biology	Chemistry SL or HL Biology SL or HL Math SL or HL Physics SL or HL	Physics & Chemistry (1ere) Biology & Earth Sciences (1ere + terminale) Mathematics (1ere + complementaire or terminale)	Chemistry AS Level or A Level Biology AS Level or A Level Math AS Level with Pure Math 2 or A Level Physics A Level
	Chemistry	Chemistry HL Math HL Physics HL	Physics & Chemistry (1ere + terminale) Mathematics (1ere + terminale)	Chemistry A Level Math A Level Must take remedial physics

	Computer Science	Math HL	Mathematics (1ere + terminale)	Math A Level
	Economics	Math HL	Mathematics (1ere + terminale)	Math A Level
	Mathematics	Math HL	Mathematics (1ere + terminale)	Math A Level
	Physics	Math HL Physics HL	Mathematics (1ere + terminale) Physics & Chemistry (1ere)	Math A Level Must take remedial physics
	Statistics	Math HL	Mathematics (1ere + terminale)	Math A Level
	Earth sciences (Track: Engineering Earth Sciences	Physics HL Math HL	Physics & Chemistry (1ere) Mathematics (1ere + terminale)	Must take remedial physics Math A Level
	Earth sciences (Track: Life Resilience and Extinction)	Biology SL or HL Math HL	Biology & Earth Sciences (1ere + terminale) Mathematics (1ere + terminale)	Biology AS Level or A Level Math A Level
	Earth sciences (Track: Petroleum Geoscience)	Chemistry SL or HL Math HL	Physics & Chemistry (1ere) Mathematics (1ere + terminale)	Chemistry AS Level or A Level Math A Level
	Premed	Chemistry SL or HL Biology SL or HL Physics SL or HL	Physics & Chemistry (1ere) Biology & Earth Sciences (1ere + terminale)	Chemistry AS Level or A Level Biology AS Level or A Level Physics A Level
FHS	Environmental Health	Chemistry SL or HL Math SL or HL	Physics & Chemistry (1ere) Mathematics (1ere + complementaire or terminale)	Chemistry AS Level or A Level Math AS Level with Pure Math 2 or A Level
	Medical Imaging Sciences	Math HL Physics SL or HL Biology SL or HL	Mathematics (1ere + terminale) Physics & Chemistry (1ere) Biology & Earth Sciences (1ere + terminale)	Math A Level Physics A Level Biology AS Level or A Level

	Medical Laboratory Sciences	Chemistry HL Math HL Biology SL or HL	Physics & Chemistry (1ere + terminale) Mathematics (1ere + terminale) Biology & Earth Sciences (1ere + terminale)	Chemistry A Level Math A Level Biology AS Level or A Level
HSON	Nursing	Chemistry SL or HL Biology SL or HL Math SL or HL	Physics & Chemistry (1ere) Biology & Earth Sciences (1ere + terminale) Mathematics (1ere + complementaire or terminale)	Chemistry AS Level or A Level Biology AS Level or A Level Math AS Level with Pure Math 2 or A Level
MSFEA	Architecture	Math HL	Mathematics (1ere + terminale)	Math A Level
	Chemical Engineering	Chemistry HL Math HL Physics HL	Physics & Chemistry (1ere + terminale) Mathematics (1ere + terminale)	Chemistry A Level Math A Level Must take remedial physics
	Engineering	Chemistry SL or HL Math HL Physics HL	Physics & Chemistry (1ere) Mathematics (1ere + terminale)	Chemistry AS Level or A Level Math A Level Must take remedial physics
OSB	Business	Math SL or HL	Mathematics (1ere)	Math AS Level or A Level

Medical Record

All new students* are required to submit a complete medical record including vaccination records to the University Health Services (UHS) and finalize their medical clearance before registration.

Upon acceptance to AUB, students are required to start the process of medical clearance by following the below steps:

1. DOWNLOAD the Entrance Student Medical Record Form http://www.aubmc.org.lb/clinical/FM/Documents/student_medica_record.pdf
2. The form should be completed by the student's personal physician or a physician at the AUBMC Family Medicine clinics**. Remember to take your vaccination record with you to the physician's visit.
3. Activate your AUB net account. Complete the necessary information including immunization and other medical history using the link: http://uhs.aub.edu.lb and upload the form. You can scan or take a snapshot of the filled form using your phone. Make sure the document is readable.
4. If the submitted form is declined by UHS, an automatic email will be sent to the concerned student. The student will be responsible for updating the vaccination with the personal physician and resubmitting it.

Old returning students need to update their medical record by contacting UHS at 01350000 ext. 3015 or 7822.

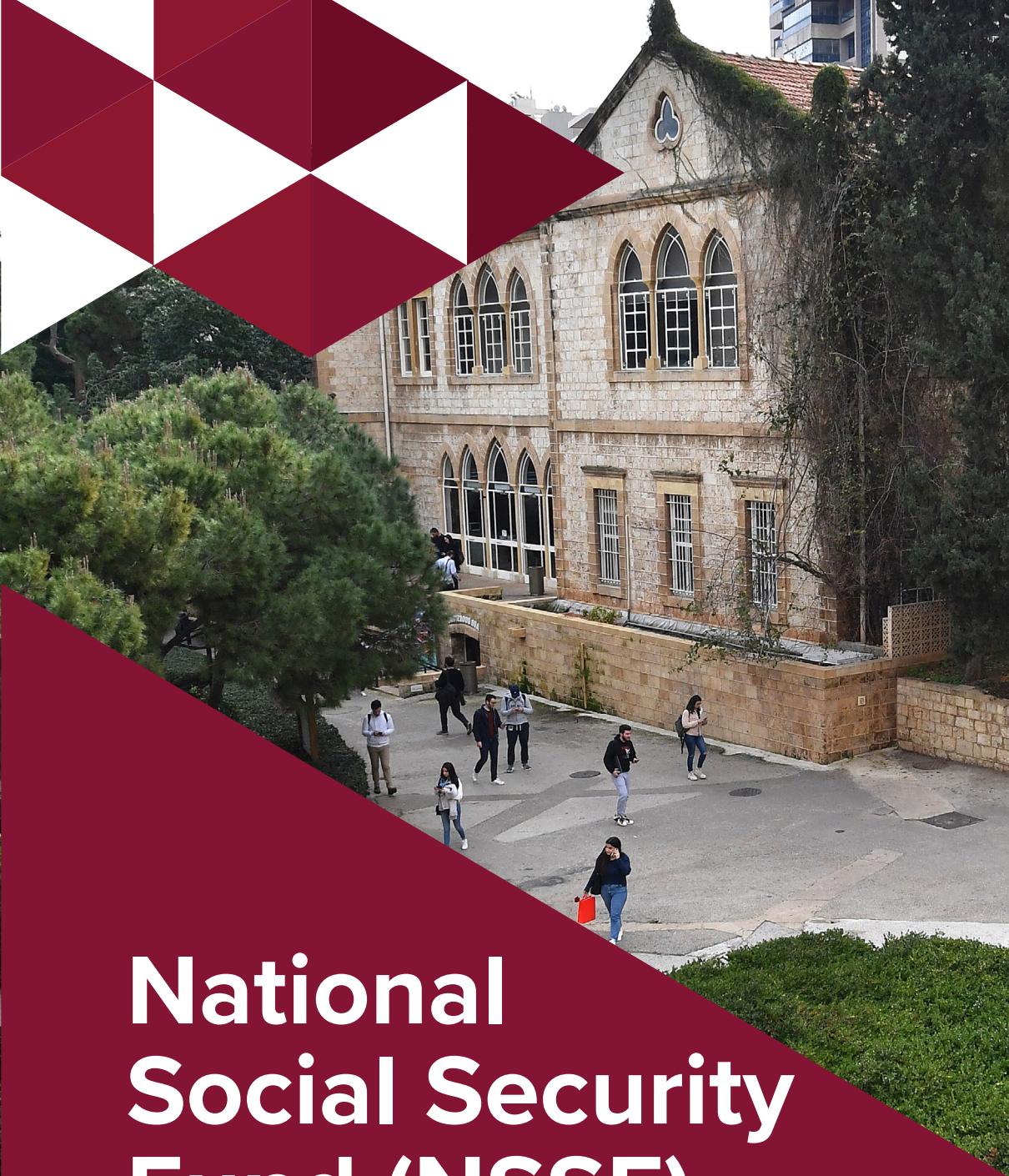
All medical records are confidential.

For more information, please contact the University Health Services at 01350000 ext. 3015 or 7822 from 8:00 am to 5:00 pm – Monday to Friday.

Students may use UHS for all their health concerns (sickness, medical conditions, immunization, medical advice etc.).

* Undergraduate and graduate students

** AUBMC Family Medicine Clinics- Wassef and Souad Sawwaf Building on Clemenceau Street phone: 01350000 ext.3000.



National Social Security Fund (NSSF) Medical Branch

National Social Security Fund (NSSF) Medical Branch

Membership in the NSSF (National Social Security Fund) is mandatory by law for all Lebanese and French students, excluding freshman and students that are older than 30 years. Non-Lebanese students may not join.

All new students and returning students who have been absent from AUB for a number of terms who are eligible according to the above are URGED to complete, in person, the NSSF declaration form at the Office of the Registrar Window as per deadlines usually circulated to the students.

Please read the following carefully before you fill out the form:

A- Those who benefit from NSSF
1. Students who benefit from one of their parent's NSSF or
2. Students who are working and have their own NSSF number
Must bring a certificate showing their NSSF number or that of their parents so that the fee can be refunded. (N.B.: The fee is non-refundable after the deadline).

B- Those who do not benefit from NSSF
1. Students who do not benefit from one of their parent's NSSF or
2. Students who do not work
Must bring a family registration form إخراج قيد عائلي or copy of their National Identity Card to become enrolled in NSSF and receive their own NSSF number.

AUB staff dependents must also declare.

Health Insurance Plan (HIP)

The Health Insurance Plan (HIP) provides medical and hospital coverage to the AUB community, namely academic and non-academic staff, retirees, students, and IC staff and their families.

- Second-class health care coverage is mandatory for all students during their years of study at AUB. Therefore, a new or continuing student registered for at least 6 credit hours is automatically enrolled under the Health Insurance Plan (HIP). However, a student may be exempted from enrolling in HIP if s/he presents proof that s/he is covered by another healthcare insurance provider.
- HIP members are required to exclusively use the medical services of the AUB Medical Center (AUBMC). HIP coverage of students is limited to medical care inside Lebanon only.
- A 'student' is defined as a person registered for a course of study at the university, whether working or not working towards a degree, on a full-time or part-time basis. Auditors are not considered students.
- PhD students - while registered - are eligible for HIP until they achieve their degree.
- Graduate students registered for a thesis are eligible to continue HIP coverage for a period of two consecutive years only.
- Students who register at the beginning of the first term are covered by HIP for twelve months, provided they do not graduate, withdraw, or become suspended and/or dropped from the university. HIP fee charges per term are announced each year by the AUB Benefits office.
- Students who register at the beginning of the second term are covered until September 30 of the same year, provided they do not graduate, withdraw, or are not suspended and/or dropped from the university.
- Students who register at the beginning of the summer session are covered until September 30 of the same year. Student coverage during the summer is strictly limited to use of the AUB Medical Center (AUBMC) services.
- In case of emergency during the fall and spring terms only, if students are not on campus or within the vicinity of the AUB Medical Center, students can report to the nearest medical service provider and get the needed care. Reimbursement of the bill cannot exceed 80 percent of AUBMC rates.
- Eligible married students may enroll their spouse and children, who are living with them in Lebanon, at the regular second-class rate as long as they remain duly registered at the university and are HIP members.
- Unlike other HIP members, students are not charged co-payment or cost sharing applied by the plan to outpatient services.
- A student will be covered by HIP from the beginning of a specific term provided he/she registers and pays his/her fees. Coverage is up to 48 hours after graduation or leaving the University (due to withdrawal, or being dropped from the University).

These guidelines are meant to be a mere summary of provisions of the plan and are provided solely as a matter of convenience; they in no way define or limit the scope or intent of any provision of the plan.

Fees, Expenses, Tuition, and withdrawal Information

The American University of Beirut is a non-profit institution. Costs to students in tuition and other university fees are kept at a minimum, consistent with the provision of high-quality instruction and adequate facilities and equipment. The university reserves the right to change any or all fees at any time without prior notice. Such changes are applicable to students currently registered at the university as well as to new students.

Payment of Fees

- Each AUB student must pay all her/his tuition and other university fees including health insurance plan, internet fee, social activity fee, and NSSF.
- Statements of fees are available on the AUB website.
- All students must complete registration and the payment of tuition fees and other charges according to the academic calendar on page 4 for the first and second terms. Under special circumstances, late payment is permitted during a period of no more than five working days after the announced deadline and is subject to a late payment fee of $100.
- Students with zero credit balances must notify the Office of the Comptroller—Students Setion via email at compt_sas@aub.edu.lb — to finalize their registration.
- Sponsored students, staff dependents, graduate assistants, and student staff members should contact the Office of the Comptroller—Students Accounts Section— before the payment deadline in order to finalize their registration and confirm their enrollment and attendance.
- Students who demonstrate financial need must formally apply to the Office of the Comptroller for deferred payment arrangements (Installment plan) for tuition fees according to the academic calendar for the first and second terms. Applications for deferrals are not accepted thereafter. Deferred payments are not a right and are only agreed to under specific and special circumstances. Students who arrange for deferred payments are still required to complete all registration formalities within the set deadlines and students must make the initial/first settlement within the set deadline. Deferred payment arrangements are not permitted for the summer session in any faculty.
- Applications for deferred payment arrangements are reviewed by the Office of the Comptroller, which is responsible for administering all deferred payment arrangements.
- All students who apply for deferred payment arrangements must pay at least 50 percent of the net amount of tuition due. All other charges must be paid in full with no deferrals. A student must pay a deferred payment application fee of $33, whether the application is approved or not. Should the student's application be approved, the student must pay the balance of tuition, the deferred application fee of $33, and an interest of 1 percent per month on the deferred amount. All payment must be concluded by the announced deadlines.
- Due dates are not extended nor are late payment fees waived for any reason.
- Students are expected to meet all financial obligations to the university by the appropriate due date. For any student who fails to promptly meet her/his financial obligations, the university reserves the right to place an encumbrance on the student's record that prevents registration for future terms and the release of transcripts and diplomas, and also prevents access to other university services. It is each student's responsibility to be informed of all registration and fee payment dates and deadlines.

Up-to-date schedules for registration and payment of fees are available through the Office of the Registrar. This information, as well as the tuition fee tables, is also on the following website: www.aub.edu.lb/comptroller/Pages/Student.aspx

Office of the Registrar
American University of Beirut
PO Box 11-0236
Riad El Solh 1107 2020
Beirut, Lebanon
Tel: +961-1-374274/374444
Ext: 2570/2571
Fax: +961-1-744469
Email: registrar@aub.edu.lb

Withdrawals

In the event a student withdraws for justifiable reasons after registration, fees are refunded according to the following schedule for the fall and spring terms:

Before the official start of classes	100% of full tuition and other fees
During the first week of classes	75% of tuition
During the second week of classes	50% of tuition
During the third week of classes	25% of tuition

The following schedule is applied in refunding fees for the summer session:

Before the official start of classes	100% of full tuition and other fees
During the first week of classes	75% of tuition
During the second week of classes	25% of tuition

For additional information, contact:
Office of the Comptroller, Student Accounts Section:
www.aub.edu.lb/comptroller/Pages/Student.aspx

During Winter Session and in the event a student withdraws for justifiable reasons after registration, fees are refunded according to the following schedule:

During the first two days of the Winter Session: 50% refund.

Financial Aid

Undergraduate

AUB offers financial aid to needy and qualified students in the form of need-based financial aid grants, merit scholarships and student work-study.

Need-Based Financial Aid Grants

Need based Financial Aid Grants are outright awards of assistance, based on demonstrated need, as assessed by the Interfaculty Financial Aid Committee.

Prospective Students

Financial aid application is opened for a specific period announced on the Office of Financial Aid website www.aub.edu.lb/faid. During this period, all prospective students who submit an AUB admissions application will receive an email from the Office of Financial Aid with information on the financial aid process, how to access the financial aid application and individual deadlines.

Enrolled Students

Enrolled students wishing to apply for financial aid should send an email to faid@aub.edu.lb during the period which is announced on the Office of Financial Aid website and will receive a reply with all necessary information.

Only complete applications are evaluated and the need based financial aid grant is valid for the normal period of study as long as the student remains in good academic standing.

Merit Schorlarships

AUB offers several merit scholarships for talented students:

- **AUB Merit Scholarship**

  Full-tuition merit scholarship offered to ten newly admitted undergraduates with outstanding academic qualifications. AUB Merit Scholarship recipients are selected from among the newly admitted undergraduate students on the basis of academic achievement. Students do not have to submit an application to be considered for AUB Merit Scholarship. Awards are renewable for each undergraduate year provided that the student maintains GPA of 3.5 per term.

- **Early Admission/Acton Merit Scholarship**

  Early Admission and Early Action recipients are granted 30% and 25% scholarship of tuition respectively. To maintain this scholarship students must enroll in their accepted major during the first term and maintain GPA of 3.5 per term.

- **Lebanese Baccalaureate Scholarship**

  AUB, in cooperation with the National Council for Scientific Research (CNRS), grant the best three students in each of the four sections of the Lebanese Baccalaureate to be granted a full-tuition scholarship, provided that the student maintains GPA of 3.5 per term.

- **Liberal Arts Scholarship**

  Liberal Arts Scholarship promotes liberal arts education in Lebanon and the MENA region, with a vision that emphasizes the importance of undergraduate studies in humanities and social sciences, namely in the following programs: Arabic Language and Literature; Archaeology; Art History; Education/Elementary; English Language; English Literature; History; Philosophy; Sociology-Anthropology; and Studio Arts. Interested candidates must complete both an admissions and a financial aid application indicating only one chosen field of study. Freshmen students are not eligible for this scholarship, but can apply after they successfully complete the freshman year. Awardees will receive 70% of the tuition fees throughout their undergraduate education at AUB, and during normal period of study provided they remain in good academic standing.

Need-Based Work-Study

Students who are recipients of need based financial aid and request additional funds, may be recommended for the work study program. Those enrolled in this program, are expected to work a minimum of 50 hours per month during a term to be awarded 10% of the tuition fees. The work type and place will be assigned to the student by the Office of Student Affairs. The amount the student earns through Work-Study is deducted from the student's tuition.

Governmental Student Aid for North American Students

U.S. Federal Student Loans

Student loans are available for American students pursuing their studies at AUB. These low-interest loans are offered by the U.S. Treasury in the form of Direct Stafford and PLUS loans. Applications are submitted yearly online at https://studentaid.gov/h/apply-for-aid/fafsa. Students who are American citizens or permanent residents, enrolled at AUB in a regular degree program, and maintaining a satisfactory academic progress are eligible for these loans.

The need of eligible students is assessed by the Office of Financial Aid based on established criteria by the U.S. Federal Student Aid program. Students must start repaying these loans after graduation following a six-month grace period.

AUB and AUB's Office of Financial Aid have developed a portal for obtaining consumer information about the university and its offered federal student aid loans as part of its response to the Higher Education Act (HEOA) of 1965, as amended. The Act requires institutions receiving Title IV federal financial aid to disclose general information and reports on various policies, procedures and operations, including policies and procedures with information related to academic programs, admissions and financial aid, student outcomes, and health and safety.

The consumer information portal is found at www.aub.edu.lb/faid/Pages/Consumer-Information.aspx

Canadian Grants and Loans

The Government of Canada offers student grants and loans to eligible Canadian students enrolled at AUB.

Students can go to the student grants and loans service of their province to find out if they're eligible for student grants and loans, to know how much they can receive, and to apply for the student grants and/or optional loans in one application.

Provinces and territories may cover one or more of the following: tuition, books, equipment and supplies, mandatory student fees, and living expenses.

A list of provincial and territorial student aid offices with links are found at: https://www.canada.ca/en/services/benefits/education/student-aid/grants-loans/province-apply.html

Office of Student Affairs

The Office of Student Affairs oversees student activities, athletics, counseling, student housing, and career and placement services. The office also manages university-wide operations, such as the New Student Orientation and the work-study programs. The Office of Student Affairs provides services to students that enhance their overall well-being and create opportunities for them to enrich and broaden their educational experience.

The website has comprehensive information on all programs:

http://www.aub.edu.lb/SAO/Pages/default.aspx

Contact

West Hall, Ground Floor

Tel: +961-1-374374, ext. 3170

Fax: +961-1-744478

Email: osa@aub.edu.lb

Student Activities

The Department of Student Activities is committed to enhancing the student experience outside the classroom by providing opportunities for student development through co-curricular activities that complement AUB's academic programs. The department of student activities strives to enrich the intellectual, ethical and social development of our students by engaging them in university and community events and by providing leadership opportunities. Our aim is to foster holistic student development. Students can become members in clubs, societies, student government, student publications, or the Outdoors Festival.

The department plays a central role in the organization process for annual events like New Student Orientation and student elections.

The Department of Student Activities and the Dean of Student Affairs must approve all student activities organized on- or off-campus. The department's role is to help in facilitating these activities and ensure that students are applying the event planning process. West Hall building is considered the student hub where most student activities are held, in addition, to various AUB events sponsored by faculties, departments, centers, and alumni.

To learn more about the department of student activities visit our website at

www.aub.edu.lb/SAO/activities/Pages/default.aspx

Contact

West Hall, Ground Floor

Tel: +961-1-374374, ext. 3197

Email: studentactivities@aub.edu.lb

Charles Hostler Student Center (CHSC)

The university offers a wide range of sports, fitness and recreational programs through its Athletics department. The Charles W. Hostler Student Center (CHSC) is the hub of athletics, recreation and wellness on campus.

CHSC is comprised of three buildings. On the second floor of the pool building and overlooking the Corniche is a 6-lane semi-Olympic swimming pool fully equipped for swimming, jumping and water polo competitions.

Flanking the pool building is an official-size Greenfield recently surfaced by artificial turf. Around the field is a 6-lane, 400m track.

The gymnasium building houses three full-size multi-purpose courts where students can play basketball, volleyball, handball, futsal, badminton, and table tennis. We also host two annual engineering competitions in robotics and civil design. Moreover, the building contains two free weights areas, two cardiovascular training areas, a stretching area, an activity room for fitness classes, yoga, dance, and martial arts, and two squash courts. The third building incorporates an auditorium that can seat 280 persons, and a rooftop amphitheater with natural grass terraces. The auditorium hosts student classes, exams, TED talks, conventions and events.

In summer, we open the AUB beach for swimming and recreation for the whole community. It is a nice place to relax and take a dip in the crystal blue waters. There is a shallow pool conceived for kids and a beach volleyball court.

Student-athletes can choose one or more of the 26 varsity teams that constitute the AUB Phoenix. This year more than 1823 students enrolled in the fall tryouts and 2526 in the spring tryouts. 426 were selected in the Fall. From 2023 to the present day, we have been competing in the Federation Sportive Universitaire du Liban, the FSUL, which is the official body that operates under the Lebanese Ministry of Youth and Sports, and which organizes collegial sports competitions for 24 universities across Lebanon's five departments.

This year, the federation has opted to categorize certain sports into two brackets: the Gold Bracket and the Silver Bracket. AUB men's football, handball, basketball, and women's volleyball teams are competing in the Gold Bracket, whereas the men's volleyball, and men & women futsal are participating in the Silver Bracket. The remaining sports follow the two legs system.

The following are the varsity sports a student-athlete can join:

Basketball (Men, Women)	Swimming (Men, Women)
Rugby (Men, Women)	Futsal (Men, Women)
Track and Field (Men, Women)	Ultimate Frisbee (Men, Women)
Football (Men, Women and JV)	Handball (Men, Women)
Archery (Men, Women)	Tennis (Men, Women)
Volleyball (Men, Women)	Table Tennis (Men, Women)
Tennis (Men, Women)	Badminton (Men, Women)
Taekwondo (Men, Women)	Wrestling (Men, Women)
Jujitsu (Men, Women)	Squash (Men, Women)

Contact

Charles Hostler Student Center

Tel: +961-1-374374, ext. 3208 or 3217

Email: chsc@aub.edu.lb

Website: http://website.aub.edu.lb/sao/sports/Pages/index.aspx

Student Housing

As one of the few residential universities in the Middle East offering a beautiful campus where a variety of extracurricular activity prevails, strong and supportive communities flourished giving hundreds of residents the chance to experience the wonders of community living.

The priority is to accommodate undergraduate applicants starting with freshman students (eligibility of assignment criteria available on student housing homepage).

Students need to apply via AUBsis; the steps they need to follow can be found under Dorms Applications on the student-housing website: http://www.aub.edu.lb/sao/housing/Pages/index.aspx. Students are strongly advised to apply as soon as the application is activated.

For each term, the housing charges appear on the statement of fees issued to each student following the completion of the registration process; they vary depending on the type of accommodation selected. The Student Residence Hall Rates are available via the link: https://www.aub.edu.lb/SAO/housing/Pages/Housingrates.aspx.

Student Housing Guests and Guest Rates

For further details (rates, room categories) regarding guests, please follow our link: https://www.aub.edu.lb/SAO/housing/Documents/GUEST%20POLICY-NEW-Aug19.pdf.

Residence Halls

There are eight student residence halls, six for women and two for men. All residence halls have heating, air-conditioning, hot water, washing machines, dryers, irons and wireless Internet. Each room is equipped with a bed, desk, chair and closet.

Women's Residence Hall

Four women's halls are located on lower campus overlooking the Mediterranean, while the fifth is located on upper campus. The off campus dorm is in the heart of Hamra, within short walking distance of campus. The ground floor of each hall houses a reception area, a common kitchen and lobby for socializing, receiving guests and watching television. Each residence offers laundry facilities as well as vending machines with snacks andsoft drinks.

Men's Residence Halls

The two men's residence halls are located in the west part of upper campus, overlooking the splendid Mediterranean and close to Bliss Street, with its abundance of shops. The ground floor of each hall houses a reception area, a common kitchen and lobby for socializing, receiving guests and watching television. Each residence offers laundry facilities as well as vending machines with snacks and soft drinks.

Contact

West Hall, Ground Floor

Tel: +961-1-374374, ext. 3175, 3183

Email: studenthousing@aub.edu.lb

Website: http://www.aub.edu.lb/SAO/housing/Pages/default.aspx

Career Hub

The Career Hub aims at helping AUB students in their transition from being students to becoming workplace professionals by encouraging them to build future career plans and make use of the different services and resources provided to achieve their personal aspirations. The Career Hub strives to promote:

Career exploration and decision making by facilitating the exploration of career options and developing effective career planning skills.

Skill development by helping students develop skills within their academic disciplines to enhance their professional image through different career workshops and one-on-one sessions.

Experiential learning by disseminating employment information and providing resources for students to explore changing trends in the global job market through three main types of experiential learning opportunities (internships, job shadowing, and company visits).

Career placement by helping current and former AUB students to achieve their career goals through the development of lifetime career planning and job search skills and assisting them in finding full-time employment, internships and part-time jobs.

Employer development by building and expanding long-term relationships between the American University of Beirut and key employers.

Major employment events by organizing an Annual Career Fair in April along with other ongoing recruitment events throughout the year to give students the opportunity to network with top employers and get hired.

Contact

West Hall, Ground Floor

Tel: +961-1-374374, ext. 3172

Fax/Direct Phone Number: +961-1-744488

Email: careerhub@aub.edu.lb

Website: http://www.aub.edu.lb/SAO/cps/Pages/default.aspx

Work-Study Program

The Office of Student Affairs coordinates an extensive work-study program that provides work-study opportunities on campus for both undergraduate and graduate eligible full-time students with good academic standing. The program allows students to work with AUB Faculty and Staff to better connect with their university. Students can apply through the AUBsis within deadlines announced for by the Office of Student Affairs. Placement is made on the basis of date of application, demand, capability, and job availability. Students may work a maximum of 80 hours per month in the Fall/Spring semesters and 60 hours per month in the Summer term.

Every year, we have more than 700 students who participate in our program and have the opportunity to contribute to their educational expenses while also developing job skills through working with faculty and administration in various campus offices and the Medical Center.

Contact

West Hall, 3rd floor

Tel: +961-1-374374, ext. 3177

Email: wsp@aub.edu.lb

Website: https://www.aub.edu.lb/SAO/Pages/Work-Study-Program.aspx

Counseling Center

The Counseling Center provides a supportive environment and enhances access to quality counseling services to ensure mental, psychological, and emotional well-being for improved academic success and student self-actualization. The center addresses the mental health needs of the university community and preserves students' right to mental health in an engaging and tolerant environment that fosters lifelong learning, growth, and development.

Counseling is a professional relationship that empowers individuals and groups from diverse backgrounds to accomplish mental health, wellness, education, and other life goals. It requires the establishment of a therapeutic relationship between a student and a trained professional to address their concerns. The overall counseling process aims to establish goals that are unique to each individual and guides students to achieve set goals and realize their full potential. Counseling is designed to be a collaborative endeavor between a student and a trained professional that results in self-discovery and learning.

The Counseling Center offers short-term mental health services that are strictly confidential and free of charge for students.

Contact

West Hall, 2nd floor

Email: counselingcenter@aub.edu.lb

Website: http://www.aub.edu.lb/SAO/Pages/Counseling-Center.aspx

Online Booking System for Appointments: AmericanuniversityofBeirut1@mail.aub.edu/bookings/

Accessible Education Office: Disability Services and Learning Support

AUB strives to foster an inclusive university community that welcomes, respects, and values people of diverse backgrounds and abilities. In concert with this mission, the Accessible Education Office within the Office of Student Affairs exists to facilitate equitable access for students with qualified disabilities to the academic, social and programs at AUB.

To achieve this goal, the Accessible Education Office (AEO) works in collaboration with students, faculty and staff to implement services and reasonable accommodations that remove barriers to participation in a robust and well-rounded student experience, without changing the academic and technical requirements of the program and or activity. The provision of such accommodations is in accordance with the university's commitment to these goals, AUB's non-discrimination policy and practices, as well as relevant US federal law.

The Accessible Education Office works in an individual and confidential manner with students who choose to disclose disabilities. Upon admittance to AUB, students seeking accommodations are encouraged to contact the AEO and set up an appointment in before each semester. See website below for more information.

Contact

Accessible Education Office

Tel. +961-1-350000, ext. 3196

Email: accessibility@aub.edu.lb

Website: http://www.aub.edu.lb/SAO/Pages/Accessible-Education.aspx

Office of International Programs (OIP)

Undergraduate

The Office of International Programs (OIP) promotes internationalization and diversity at AUB by initiating, developing and administering institutional partnerships that foster both incoming and outgoing student, faculty and staff mobility. Through its Study Abroad Program, OIP promotes exchange opportunities and advises AUB students, faculty and staff wishing to pursue international academic experiences that are academically challenging, professionally relevant and personally engaging. OIP supports all international students at AUB, enabling them to integrate into the community and enjoy a rich academic and cultural experience.

The Office of International Programs is located in West Hall, 3rd floor, Rooms 320, 322, 324.
Telephone: +961-1-374374 ext.3186,3176, 3146.
Email: oip@aub.edu.lb
Website: www.aub.edu.lb/oip

International Student Services

The Office of International Programs provides support to all international students studying at AUB by providing the following services:

- Pre-arrival advice and visa assistance (following admission to AUB).
- On-site orientation, mentoring and intercultural activities. Explanation of public government services, processes, and procedures on campus.
- Assistance in obtaining student residence permits and/or following up on transactions at Immigration authorities.
- Support with reporting theft or loss of legal identification documents at local authorities.
- Forums (both electronic and in-person) for interaction with other AUB student populations.
- For international degree-seekers, advice on studying abroad as part of their AUB degree.

Visas and Residence Permits

International students joining AUB who do not hold a Lebanese passport or Lebanese identity card must have their foreign passports valid for a period of no less than 12 months from the date of joining the university. Non-Lebanese students should also check with the nearest Lebanese Embassy or consulate in their country as to whether they require an entry visa in order to legally enter Lebanon or are eligible to obtain an entry visa at the airport. The OIP may assist students in securing their visas to Lebanon. Students who wish to benefit from OIP visa assistance must indicate this in their Confirmation Letters upon acceptance. Further information can be found on the OIP website.
Once registered at AUB, all students who do not hold Lebanese passports, and wish to stay for longer than the duration of their visas, are required to obtain a residence permit before the expiration of the entry visa they received. Students must apply for this permit within one month of arrival in Beirut and ONLY after registering and paying AUB tuition fees.
The Office of International Programs, in coordination with the Office of the Registrar, helps provide the necessary certificates for registered- non-Lebanese students in obtaining residence permits from the Lebanese authorities. Information about obtaining a residence permit is communicated at the beginning and throughout each term, and is posted on the OIP website.

Study Abroad and Student Exchange for Undergraduate Students

AUB undergraduate students may spend a year or a term abroad in an approved program of study without losing their status at AUB. They may apply to an established program at a university that has an exchange agreement with AUB or initiate their own proposal for study abroad at an accredited university of their choice. In both cases, an application (see below), approval of their faculty, as well as clearance from The Office of International Programs (OIP), are required. Study abroad and exchange programs provide students with the opportunity to travel to another country, experience a new culture, and build connections with students and faculty members at host institutions. These in-person interactions form an integral part of the experience. As such, only in-person study abroad and exchange programs are approved at AUB.

Definitions

Exchange Students

Students on exchange programs at universities with which AUB has bilateral exchange agreements, pay the usual AUB tuition rate appropriate to a 15-credit course load.

Study Abroad Students

Students on study abroad programs at universities with which AUB does not have a bilateral exchange agreement will pay the host university fees at the receiving institution. However, they must continue to pay the AUB miscellaneous fees as applicable. Summer abroad students are waived the AUB miscellaneous fees.

Students wishing to go on exchange or study abroad programs must complete the AUB Study Abroad Course Approval Petition and the host university's application. Students are responsible for the completion of both sets of application forms by the assigned deadlines.

Procedures for Study Abroad and Exchange Students

To spend a term or up to a year abroad, all students must meet the following eligibility criteria:

1. Students must have completed 24 credits at the sophomore level at AUB to apply for up to a yearlong study abroad program, unless applying for a summer abroad program.
2. Freshmen students may spend a summer abroad upon the completion of 24 credits.
3. Students may earn a maximum of 30 credits in a study abroad program without losing their status as AUB students.
4. Students must meet the AUB residence requirements as stipulated in the AUB Catalogue.
5. Students may not exchange or study abroad during their final term at AUB.
6. To be considered for **exchange and study abroad programs**, students should have a minimum cumulative average of 3.0.

Students will receive credit for all course work completed abroad as long as:

(a) the relevant academic departments at AUB have **pre-approved** the courses through the study abroad online petition system.
(b) the student has achieved a minimum passing grade equivalent to the required AUB grade in each of the courses as accepted by the student's Faculty. Credits received on study abroad and exchange programs are considered to

be transfer credits and will show as pass/fail on the AUB transcript.
(c) the host university provides an official transcript of record directly to the Office of International Programs. An official transcript from the host institution must be received by AUB in order for credits to be successfully transferred.
(d) None of the courses taken is online but up to 25% taken may be hybrid.
(e) Certificate of Physical attendance is required.

Note:
(a) Courses taken abroad may be accepted at AUB and need the approval of the **chairperson** of the academic department offering the course at AUB AND the Academic and Curriculum Committee of the student's Faculty.
(b) Courses that may satisfy the AUB General Education (GE) Requirements must be approved by the GE committee. Students are required to submit a petition through their respective faculties for each course to be evaluated.
(c) The maximum academic load during a regular term abroad is equivalent to 17 AUB credits while the minimum is 12. Students who opt to take more than 17 or less than 12 AUB credits, must submit a petition to their faculty and provide OIP with proof of approval prior to going abroad. Nevertheless, no more than 30 credits can be transferred back to AUB.
(d) Students who decide **to change** one or more of their pre-approved courses once they are at the host university must contact their department chair by email and submit the Study Abroad petition for approval of the replacement or added course(s) within one month of the beginning of the AUB term; otherwise, the student risks not being granted the course transfer upon return to AUB.

Registration Process at AUB for Students who are approved to go on study abroad or exchange programs

To maintain their status as active students at AUB while abroad, students are required to:

- Submit the completed AUB Study Abroad Course Approval Petition by the assigned deadline.
- Attend a mandatory OIP pre-departure meeting.
- Complete the Final Confirmation and Clearance Form and submit it to OIP by the assigned deadline.
- Pay all fees due to AUB by the assigned deadline.
- Not register for classes at AUB or at any other institution of higher learning, either in-person or online where there is an overlap in time.

Once students complete **all** of the steps above, their registration status will appear as EXPR (Study Abroad) or EXCH (Exchange) depending on the type of program they wish to be enrolled in. Students will then be able to maintain access to AUBsis and online library resources. Study abroad and exchange students will have the same privileges as continuing students on campus.

Credit Transfer for students upon return from their term or year abroad

- Students should be sure to obtain an official transcript from the host university and request to have it sent directly to the Office of International Programs: Hardcopy Official transcripts should be mailed to the following OIP Mailing Address: AUB/ Office of International Programs, West Hall, 3rd Floor, Room 320, 1107 2020, Beirut, Lebanon.

Electronic Official transcripts : If your host university only issues electronic transcripts, these must be certified by an official of the University with a certificate provided by a recognized security vendor or be encrypted and only accessible to the recipient and should be emailed to aubabroad@aub.edu.lb.

- Submit an Exchange or Study Abroad Testimonial survey.

AUB facilitates several study abroad and exchange programs including Erasmus+ for undergraduate and graduate students. AUB's growing number of international partner institutions include but are not limited to:

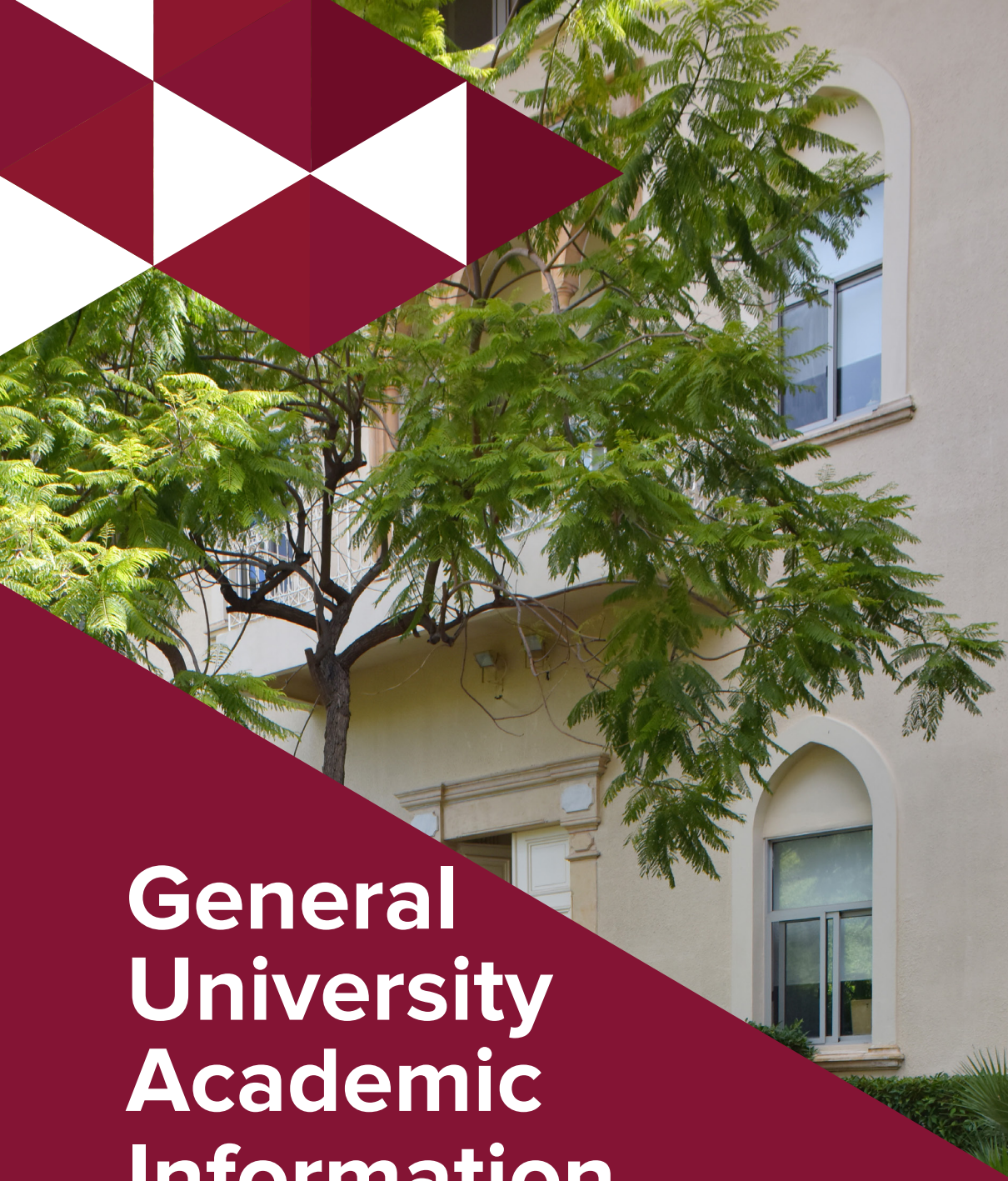
- Aarhus University, Denmark
- American University in Cairo, Egypt
- American University of Paris, France
- American University, USA
- Amherst College, USA
- Augsburg University, USA
- Bogazici University, Turkey
- Boston College, USA
- Boston University, USA
- California Institute of the Arts, USA
- Danish School of Media & Journalism, Denmark
- Ecole Polytechnique, France
- Ecole Supérieure des Sciences Commerciales d'Angers, France
- EDHEC Business School, France
- EM Normandie Business School, FranceESADE Law School, Spain
- Freie Universität Berlin, Germany
- FGV Getulio Vargas Foundation, BrazilHanyang University, South Korea
- HEC Montreal, Canada
- Institut d'Etudes Politiques de Paris (Sciences Po), France
- IE University, Spain
- John Cabot University, Italy
- Koç University, Turkey
- Leuphana University of Lüneburg, Germany
- Luigi Bocconi University, Italy
- Lund University, Sweden
- Middle East Technical University, Turkey
- McGill University, Canada
- NEOMA Business School, France
- New York University – Stern School of Business, USA
- Paris School of Business, France
- Open University of Cyprus, Cyprus
- Pitzer College, USA
- Politecnico Di Torino, Italy
- Queen Mary University of London, UK
- Radboud University, Netherlands
- Reed College, USA
- Stanford University International Honors Program, USA
- The University of Sydney, Australia
- Temple University, USA
- Trinity College Dublin, Ireland
- Université de Genève, Switzerland
- Università Cattolica del Sacro Cuore, Italy
- University College Dublin, Ireland

- University College London, UK
- University of Bologna, Italy
- University of Bern, Switzerland
- University of Copenhagen, Denmark
- University of California, Berkeley, USA
- University of Granada, Spain
- University of Kassel, Germany
- University of Montreal, Canada
- University of Pavia, Italy
- Universitat Pompeu Fabra, Spain
- University of Pennsylvania, USA
- University of South-Eastern Norway, Norway
- University of Toronto, Canada
- University of Wisconsin- Platteville, USA
- University of Zurich, Switzerland
- Uppsala University, Sweden
- Virginia Commonwealth University, USA
- Zurich University of Applied Sciences, Switzerland

AUB has a number of Erasmus+ inter-institutional credit mobility agreements with several universities in Europe. Examples include Aarhus University, Danish School of Media & Journalism, University of Copenhagen in Denmark, Institut d'Etudes Politiques de Paris (Sciences Po) in France, Freie Universität Berlin in Germany, Athens University of Economics and Business in Greece, Politecnico Di Torino, University of Bologna in Italy, Amsterdam University of Applied Sciences in Netherlands, Trinity College Dublin in Ireland, University of Granada in Spain, Uppsala University in Sweden, Istanbul Sehir University, Koc University, and Middle East Technical University in Turkey.
Undergraduate students are required to complete at least 24 credits at AUB before beginning a period of study abroad, while graduate students are required to complete at least 6 credits at AUB before studying abroad; additional academic policies and procedures also apply. For a complete list of exchange and other study abroad options at AUB, or to review the guidelines for study abroad, visit www.aub.edu.lb/oip or Room 320 in West Hall.

OIP Resources for Faculty

The Office of International Programs provides information for faculty on international standards of practice for credit transfer and grade transfer upon request. In addition, OIP maintains a current listing of institutions/consortia/universities with which AUB maintains formal institutional agreements for purposes of student, staff and faculty mobility. Please note that exchange agreements cannot be put into effect at AUB without the approval of the Provost. Guidelines for setting up new international academic exchange agreements and other institutional relationships are available by request from the Director.



General University Academic Information

Undergraduate

Advisors

Academic advising is a collaborative process built upon personal responsibility, regular interaction, and positive rapport between students and faculty. The American University of Beirut will provide students with an advising experience that facilitates personal development, enhances academic performance, and ensures progress towards graduation.

Each student is assigned an advisor who mentors the student in course selection. Names of advisees and their respective advisors are available through the Student Information System AUBsis.

Categories of Students

Full-Time Students

To be considered full-time, students must carry a minimum load of twelve (12) credits per regular term (Fall or Spring terms).

Part-Time Students

The category of part-time students is restricted to the following students:

- AUB staff members who are working toward a degree.
- Diploma students.
- Degree seeking students who need fewer than the minimum credit load and are granted permission through an online petition by the appropriate faculty committee for one of the following reasons:
  - Potential graduation/curriculum restrictions.
  - Health issues.

Non-Degree Students

The category of non-degree students is restricted to those students who are not working for a degree. Students in this section could be visiting, cross-registered, exchange, study abroad, special not working for a degree and auditing students.

Auditing Students

Students who wish to attend individual classes without receiving credit may apply as auditing students. AUB students can apply to audit a course through the online petitions system (OPFS). Non AUB students must email regist@aub.edu.lb to obtain approval. An applicant is eligible to audit a course if the following requirements are met:

- Baccalaureate II or its equivalent, or a bachelor's degree or its equivalent from a recognized academic institution.
- Approval from the instructor of the course.
- Payment of the tuition charge at the Comptroller's Office (student accounts section).
- Registration as an auditor at the Office of the Registrar.

Applicants are not eligible to audit laboratory, studio, or seminar courses.

Because permission to audit is on a space-available basis, applicants are not permitted to register until after registration of regular students is complete.

The university does not grant academic credit for such work.

Majorless Status

Students who have been admitted as majorless and not yet chosen a major or is in the process of selecting a new major are given the status of majorless. Students must be admitted to a major at least one term before graduation through the transfer process.

Students can be considered majorless based on the recommendation of the faculty due to the inability to follow a study path successfully or intention to change major. Such students must be accepted into a major by the third term of being majorless or risk being dismissed from the University.

English Proficiency

Grades on papers (term papers, essays, or examinations) or a final course grade may be lowered for the quality of writing alone.

The Intensive English Course (IEC), ENGL 100 A/B, is intended for students who have been admitted but have not met the Readiness for University Studies in English (RUSE). The minimum scores for placement in IEC is 25 on AUB-EN, 52 on TOEFL (IBT), or 5.5 on IELTS.

IEC is an integrated skills course that develops students› linguistic and communicative competence in preparation for a full-time university program. A broad range of activities and readings in various disciplines exposes students to campus culture and university-level discourse. Through regular practice in oral and written activities, students develop appropriate and effective expression in English.

Students enrolled in IEC may register for only one or two regular university courses (a maximum of 6 credits), thus earning credits toward a degree while working on achieving the level of English needed for carrying a full course load in the regular program. Such courses are restricted to Arabic and mathematics/statistics/computer literacy courses (maximum 6 credits) in the Faculty of Arts and Sciences and equivalent courses in statistics in the Faculty of Agricultural and Food Sciences, the Suliman S. Olayan School of Business, and the Faculty of Health Sciences. Students who successfully complete their IEC will automatically be placed in their class and major and will be required to complete ENGL 102.

Students who fail to pass IEC by the end of the second term are dismissed from the university. Students in IEC are subject to the same attendance requirements as all other AUB students.

For more information on AUB's English language and writing requirements, visit the Communication Skills Program website at
https://www.aub.edu.lb/fas/english/Commskills/Pages/Placement.aspx

General Education Requirements

Refer to the General Education Requirements Section under the Faculty of Arts and Sciences section.

Premedical Requirements

The minimal premedical requirements are summarized below:

A bachelor's degree in any field of study is required. Historically, the vast majority of applicants to the Faculty of Medicine have been holders of bachelor's degrees in biology or chemistry. In an effort to diversify the pool of applicants, graduates from other majors are strongly encouraged to apply as long as they complete the premedical core courses required for admission to the Faculty of Medicine. Students can take some of the premedical courses as electives in their respective majors.

Premedical core course requirements

As of 2024-2025, the minimal course requirements for admission to the MD program at AUBFM will be as listed below (the courses in parentheses are AUB courses that fulfill the requirements), irrespective of the track followed in high school or the Lebanese Baccalaureate.

Biology: 7 credits: one course in general biology with laboratory (BIOL 201, 4 credits) and one course in biochemistry (BIOL 220, 3 credits)
Chemistry: 8 credits: 3 credits in general chemistry (CHEM 201, 3 credits); 5 credits in organic chemistry with lab (CHEM 208, 3 credits; CHEM 209, 2 credits). Biology and Chemistry majors will take CHEM 210, 211 and 212 to fulfill the requirements of organic chemistry.
Computer Science: 3 credits in introductory programming (CMPS 203, 3 credits).
English: 6 credits in academic English (ENGL 203 and 204)
Physics: 4 credits in a physics course for the life sciences with laboratory (PHYS 206 and 206L, 4 credits). Biology and Chemistry majors may take other courses as dictated by their majors in lieu of PHYS 206 (e.g. Biology majors will take PHYS 204, 204L, 205 and 205L and Chemistry majors will take PHYS 211 and PHYS 211L).
Psychology: 3 credits in general psychology (PSYC 201, 3 credits)
Sociology: 3 credits in general sociology (SOAN 201, 3 credits)
Humanities: 6 credits. Any two courses recognized by the university as fulfilling the "humanities" requirements may be taken, excluding some courses listed under point 2 below. At AUB, students are encouraged to consider minoring in the medical humanities. The following possibilities are recommended - but not mandatory - to fulfill the humanities requirements:
Any 2 CVSP/CHLA courses
One CVSP/CHLA course and a one English or Arabic literature humanities course, excluding those listed below:
ENGL 227: Introduction to Language
ENGL 228: Phonetics
ENGL 229: History of the English Language
ENGL 233: Introduction to Translation
ENGL 211/212: Survey of Arabic Grammar
ENGL 213/214: Introductory Biblical Hebrew
ENGL 215: Introductory Syriac
ENGL 224: Arabic Stylistics and Metrics
ENGL 227: Arabic Linguistics
ENGL 228: Arabic Linguistics
One CVSP/CHLA and one philosophy course from the following:
PHIL 210 Introduction to Ethics
PHIL 214 Modern Philosophy
PHIL 216 Political Philosophy
PHIL 221 Philosophy of mind
PHIL 222 Philosophy of Science
PHIL 224 Philosophy of Religion
PHIL 225 History of Moral Philosophy
PHIL 230 Philosophy of Plato

MCAT: A competitive score in the MCAT, which may be taken twice only, is required. If taken twice, the higher score is considered. The MCAT score must be available at the time the application is submitted. The MCAT has sections on the biological sciences, chemical and physical sciences, social, psychological and behavioral sciences, and critical analysis and reasoning skills . Students are encouraged to review the content of the MCAT and plan their studies accordingly.

Applicants expecting to receive a bachelor's degree after the deadline for application should be aware of the following:

- Applicants must be in their senior year.
- The cumulative GPA of 70 credits or more (at the time of application) should be equal to or higher than 3.0 for students from AUB or its equivalent for those from other universities. All required core courses must have been completed by the end of the fall term of the senior year with GPA of at least 3.0. The cumulative GPA in the major courses completed by the end of the fall term of the senior year must also be equal to or greater than 3.0.
- Admission to medical school is contingent upon completion of graduation requirements and obtaining the bachelor's degree, which should be achieved by the end of the spring term of the student's senior year.

For more information on admissions to the Faculty of Medicine check 2024-25 Graduate Catalogue.

Double Major

Students may, upon approval of the relevant faculty/school, earn one degree with a double major within the same faculty as long as both majors share the same degree structure (e.g., both lead to BA, BS or BE degrees). In such cases, one degree will be issued with both majors indicated. The student must complete the requirements for both majors before the degree can be awarded. To be eligible to apply for a double major, the applicant must:

- have completed at least 24 sophomore credits,
- be in good academic standing, minimum cumulative GPA of 2.3,
- meet the major requirements as described in the respective faculty section.

Students enrolled in double majors must satisfy the requirements of both majors and must complete at least 15 credit hours over and above the requirements of the first major. The General Education requirements of one major must be completed.

Students interested in earning double majors must complete an online petition through the OPFS (Online Petition Form System) within the announced deadlines for change of major and transfer applications for the fall or spring terms. The application must be approved by the receiving department and the Admissions Committee of the faculty/school.

Dual Degree

Students may, upon approval of the relevant faculty/school, complete the requirements for another simultaneous degree while registered in another faculty/school at AUB as long as the degree structures are distinct. Within the same faculty, a dual degree is allowed for distinct degree structures (e.g. BS in Mathematics and BA in Economics, or BS in Biology and BA in Political Studies or History). In such cases, the student will be granted two degrees upon graduation. If tuition differs, students pay the higher rate. To be eligible to apply for a dual degree, the applicant must:

- have completed at least 24 sophomore credits,
- be in good academic standing,
- have achieved a minimum overall cumulative average of no less than 2.3,
- meet the major requirements as described in the respective faculty section.

Dual degree admissions are competitive and depend on available places in the faculty concerned.

The student interested in a dual degree must submit a dual degree petition form through OPFS. Students must refer to the university calendar for further information on deadlines.

Students enrolled for a dual degree must satisfy the full requirements of both degrees and complete at least 30 credit hours over and above the requirements of the greater credit hours required for either degree. They must satisfy the General Education requirements of both degrees. In addition, they may withdraw from either degree up to one term before graduation by completing the relevant petition in the OPFS.

Dual degrees must be completed concurrently and must have the same graduation date.

Second Degree

Students working towards completion of their undergraduate major degree who wish to obtain a second degree in the same or another faculty after completion of their first degree can apply for a second degree as follows:

Students who apply for a second degree during the last year of study of the first degree or within two years of completion of the first degree can do so by completing an internal application form posted on the Office of the Registrar website at https://www.aub.edu.lb/Registrar/Documents/pdfdoc/second-degree-form.pdf. The second degree application can be in the same faculty as the first degree or in another faculty. The second-degree applications will be considered by the faculty/school concerned following the same internal procedure for change of major (same faculty) or transfer (another faculty) applicants, and the concerned faculties/schools will send their decisions to the Office of the Registrar.

Students holding a bachelor's degree from an accredited institution of higher education recognized by AUB can apply for a bachelor degree in a major different from the first degree. Advanced standing transfer applications are available at the Office of Admissions website.

Students enrolled in a second degree must meet the University residency requirement of at least two regular terms with at least 30 credits of major requirements and has to meet all faculty and departmental requirements for the degree. Non AUB degree holders may be required to satisfy the AUB General Education requirements depending on the University of origin of the first earned degree.

Minor

Students declare their intention to pursue a minor by submitting the online petition "intention to fulfill a minor".

Students are required to submit the "completion of minor" petition such that it is received by the Office of the Registrar in sufficient time to meet the deadlines indicated on the Office of the Registrar webpage.

Most departments in faculties/schools offer several minor fields of study. University minimum requirements for a minor are as follows:

- A minimum of 15 credit hours earned on the basis of regular graded courses (not tutorial or special project type courses); refer to the requirements of each faculty/school.
- At least 9 credit hours of coursework must be completed at AUB.

- Each minor must have at least 6 credits exclusive to it, 9 credits may be common with the program requirements of the major field(s) of study.
- In case of multiple minors, no more than 6 credits can be used to complete the requirements of another minor in the case of a 15-credit minor or 9 credits in the case of an 18-credit minor.
- Minor courses may not be taken on a pass/fail basis at AUB.

Students should refer to the relevant catalogue section for each faculty/school for more information on each minor's requirements. To graduate with a minor, students must attain a Minor GPA of 2.3 or more and meet the faculty/school minor requirements. The minor will appear on the student's transcript but not on the degree.

Registration

Requirements

Before registering, new students must ensure that all requirements for registration have been met, particularly the conditions detailed in the acceptance email and checklist received from the Office of Admissions. Students who do not meet the conditions listed in the checklist cannot register.

The registration guide is posted on the Office of the Registrar's webpage. After attending orientation and confirming that all checklist conditions have been met, new students must follow the steps provided in the registration section of their orientation.

Continuing students must follow the steps received in the email announcing the opening of the registration they receive from the Office of the Registrar.

In both cases, students may refer to the "Registration Instructional Video" available on the Office of the Registrar webpage.

Students can introduce final adjustments to their schedules during the change of schedule (drop and add) period. This period normally extends for one week starting the second day of classes.

Freshman students will be promoted to their sophomore year only when they complete all their freshman courses and secure the Lebanese Baccalaureate II Equivalence from the Ministry of Education and Higher Education. Freshmen who lack up to four credits to complete the Freshman Program may register these four credits during a third regular semester along with sophomore-level courses. Failure in these credits will entail their repetition with an approved underload for these credits only in the following term.
Details can be found on the Office of the Registrar webpage.

No student is allowed to register for a course unless its prerequisite(s) have been met.

Cross-Registration

Students Enrolled at AUB Taking Courses at Other Universities in Lebanon

Students studying at the American University of Beirut may be allowed to cross-register for a course at other recognized academic institutions if all the following conditions are met:

- the course is a program requirement at AUB,
- the course is not offered at AUB during the graduation term. Official grade must be received by AUB two weeks prior to the senate vote, or graduation will be postponed to the following term,
- the course in which the student intends to cross-register is equivalent to a course that AUB offers (the number and title of each of the two equivalent courses should be clearly indicated),

- the student completes the cross-registration form, secures the chairperson's approval, and sends it to the Office of the Registrar,
- the Office of the Registrar authorizes the student to cross-register; the student submits authorization to the concerned institution and secures their consent,

Students will be registered for the course manually at the Office of the Registrar upon presenting the signed form; and must earn a C+ or its equivalent in the cross registered course in order to transfer the credits.

Students Enrolled at Other Universities Taking Courses at AUB

For purposes of cross-registration, students studying at recognized academic institutions who wish to take courses at AUB must do the following:

- secure permission from their institutions to take specified courses at AUB,
- secure permission from the chairperson of the concerned department at AUB,
- present the above permissions to the AUB Office of Registrar, and
- settle the fees at AUB upon registration by the Office of the Registrar.

Withdrawal from Courses

Full time students can withdraw from courses to a minimum of twelve (12) credits per regular term by the withdrawal deadline specified on the University calendar. Students receive a grade of 'W' for the course. Students who withdraw from a course will not be reinstated in that course and are not allowed to take the final exam. At least 40% of the overall course assessment is expected to be issued by the instructor before the last day of withdrawal.

Tutorials and Directed Study

Students can register for a single tutorial of up to three (3) credits during their final year at AUB.

Study Abroad for Undergraduate Students

AUB undergraduate students may choose to study abroad in their junior year in an approved program of study, without losing their status at AUB. They may apply for an established program at a university that has an exchange agreement with AUB or initiate their own proposal for study abroad at a university of their choice recognized by AUB.

In both cases, an application and approval from the faculty and the Office of International Programs (OIP) are required. More information regarding study abroad options and procedures is available at the following link: www.aub.edu.lb/oip/AubAbroad

Courses

Credit Load

Full time students in good academic standing can normally register for up to 17 credits per regular term, up to 9 credits during the summer term and up to a maximum of 3 credits during winter session. Students in the following categories must submit an overload petition to the appropriate faculty committee for permission to register for course loads above these maximum credit loads:

- Freshman students intending to go into medicine or engineering, and who have an average of at least 3.3 in the first term, may take an additional

course in the second term.

- Junior and senior (third and fourth year in the professional schools) students who have completed their English communication skills requirements at the level required by their major departments may register for a maximum of 18 credits per term (a maximum of 19 credits per regular term in MSFEA and FHS).
- Other students on a case-by-case basis.
- Students on second consecutive, third non-consecutive or strict probation (see probation).

If full-time students wish or are forced to reduce their load to fewer than 12 credits, they must submit an underload petition to the appropriate faculty committee.

Repeating Courses

No course may be taken more than three times including withdrawals from the course. When a course is repeated, the highest grade is considered in the calculation of the cumulative average. All course grades remain in the student's permanent record and are used for the calculation of academic standing.

Students are not allowed to repeat a course in which they have an incomplete grade, otherwise the course will be dropped.

If a transferred course is repeated at AUB, the credits and grade earned at AUB prevail.

Attendance

Classes and Laboratories

- Students are expected to attend all classes, laboratories or required fieldwork. The student is responsible for all course material and for any announcements made during class time, lab time or fieldwork.
- Students who miss more than one-fifth of the sessions of any course prior to the withdrawal deadline can be withdrawn from the course by the instructor.
- Students who withdraw or are withdrawn for excessive absence from a course receive a grade of "W."
- An instructor who withdraws students from the course because of excessive absence must have stated in the syllabus that attendance will be taken.
- Students who do not withdraw or cannot be withdrawn for excessive absence from a course will receive a grade of F.
- Students may not withdraw from a course if the withdrawal results in being registered for fewer than twelve (12) credits for regular terms without having an approved underload petition.

Examinations, Quizzes and Class Assignments

Students who miss a scheduled examination (including midterms, quizzes, or other class assignments) must present an excuse considered valid by the course instructor. Make-up exams, quizzes, and class assignments will be administered according to the course syllabus and must be completed before the final grade of the course is issued at the end of the term.

Only medical reports and/or qualified professional opinions issued by an AUB Medical Center (AUBMC) doctor, or by the University Health Services may be accepted. Should there be a question about the validity of any excuse presented by the student, the matter should be referred to the appropriate faculty committee. Instructors will make sure there is no time conflict between an exam and a regularly scheduled course.

Residency Requirements

Students who transfer to AUB must earn their final forty-five (45) credits while in residence (physically present) at AUB. Students transferring within AUB faculties must also meet specific residency requirements.

AUB students in good academic standing who did not transfer to AUB from another university, and who wish to study abroad may spend up to one year and earn up to thirty (30) credits at another university. AUB students must spend their last term in residence at AUB.

The MEHE requires the following to be met:

- A minimum residency of six regular terms at AUB for three-year bachelor programs, 8 terms for four-year programs and 9.5 terms for MSFEA.
- Students admitted as freshmen need two additional terms to meet the residency requirement.
- Two Summer sessions can be counted as one regular term only once except for engineering disciplines where this can be done twice.

Grades

Grading System

For new students registered at the University starting fall term 2019-20, AUB uses a 4.3 letter grade system according to the following table:

The GPA is capped at 4.0

Course Letter Grade	Quality Points
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
F	0.0
I	Incomplete
P	Pass

PR	In Progress
W	Withdraw
NP	No Pass

GPA calculation:

GPAs calculated using letter grades are actually weighted. This means that the letter grade you receive for a course is weighted by the course's credit value. For example, if you receive a B+ in a course that is a three credit-hour course, your B+ is equivalent to a quality point value of 3.3, and this 3.3 is multiplied by three credit hours for a total of 9.9. If you take a four credit-hour course at the same time, and earn an A-, this A- is equivalent to 3.7 quality points, and when multiplied by four credit hours results in a total of 14.8. For simplicity's sake, let us say that these were the only courses you took in this particular term, so your GPA would thus be (9.9 + 14.8) / 7 or 3.53. Had I- course been a three-credit course, the calculation would have been (9.9 + 11.1) / 6 or 3.50. The weighting of the course for which you earned an A- enhances your GPA in the first example. At AUB, GPAs are capped at 4.0.

Calculation of GPA in Tabular form:

	Grade	**Quality Points**	**Credits**	**Total Quality Points**	**GPA**
Course 1	B+	3.3	3	9.9	
Course 2	A-	3.7	4	14.8	
			7 (a)	24.7 (b)	3.53 (b/a)

For students registered at the University prior to fall term 2019–20, AUB uses a numeric system with an Equivalent Grade Point Average according to the following table.

Cumulative Average	**GPA**	**Cumulative Average**	**GPA**	**Cumulative Average**	**GPA**	**Cumulative Average**	**GPA**
<60	0	67	1.86	75	2.73	83	3.46
60	1	68	1.98	76	2.82	84	3.54
61	1.13	69	2.09	77	2.92	85	3.63
62	1.26	70	2.2	78	3.02	86	3.7
63	1.38	71	2.31	79	3.11	87	3.78
64	1.5	72	2.42	80	3.2	88	3.86
65	1.63	73	2.52	81	3.29	89	3.93

66	1.74	74	2.62	82	3.38	>=90	4
I	Incomplete						
P	Pass (Normally Used for Theses and Projects)						
PR	In Progress						
W	Withdraw						
F	Fail						

Change of Grade Policy

After grades are posted on the AUB Student Information System (AUBSIS), a change of grade is not allowed unless a demonstrable mistake was made in the correction of the final examination or in the calculation of the grade. In such a case, the instructor must initiate a Change of Grade petition for approval along with supporting evidence for the mistake warranting the change of grade. The chairperson of department offering the course and the appropriate faculty committee must approve the petition.

No change of grade will be accepted and processed after the lapse of one regular term.

Students have the right to access their corrected exams, including final exams, without penalty, and to request review of their exams in case mistakes have been made in calculating grades or in corrections. The student's request to review the course grade must be made to the course instructor within one week of the posting of course grades. In case the review by the instructor results in a change of course grade, the instructor must initiate the Change of Grade petition.

If a dispute regarding the change of a grade continues, the student must discuss the issue with the chair of the department. If the student is still not satisfied, s/he must submit a petition to the faculty Academic and Curriculum Committee requesting further consideration.

Incomplete grades

Students who receive an incomplete grade for a course must complete the final course work within maximum one month of the start of the next regular term.

Incomplete coursework is reported as "I" followed by a grade reflecting the evaluation of the student based on the grade calculated as per the course syllabus where a grade of zero is computed for all missed work. If the work is not completed within the period specified, the "I" is dropped and the attached grade becomes final.

A grade of "I" may be assigned by the appropriate faculty committee in cases where it extends the incomplete beyond the normal reporting period based on an approved petition.

Correct Use of Language

English is the language of instruction at the University. Papers (term papers, essays or examinations) that are poorly written, no matter what the course, may receive a lower grade for the quality of writing alone.

The final grade in any course may be lowered for consistent substandard written or oral expression. In extreme cases, a failing grade may be given for this reason alone.

Credit Transfer

For students returning from study abroad

www.aub.edu.lb/registrar/Documents/studyabroad-undergraduate-policies-procedures.pdf

Upon completion of the Study Abroad Program, students must make sure that the earned credits are transferred toward their degree requirements as follows:

- The relevant academic departments at AUB have pre-approved the courses through the study abroad online petition system.
- Achieving a minimum passing grade equivalent to the required AUB grade in each of the courses as accepted by the student's Faculty.
- Credits received on study abroad and exchange programs are considered to be transfer credits and will show as pass/fail on the AUB transcript. These credits will not be part of the calculation of the GPA.
- The host university provides an official transcript of record directly to the Office of International Programs.
- The Office of International Programs transmits the official transcript to the Office of the Registrar for credits to be transferred.
- None of the courses taken are online but up to 25% taken may be hybrid.
- Certificate of Physical Attendance is required.

For students admitted as transfer students from other institutions

Upon completion of registration for their first term at AUB, students must make sure credits earned at other institutions that count toward program requirements at AUB are transferred as follows:

- Students must submit the course equivalence petition and attach the following,
  - o the syllabi (including course learning outcomes if available) of all courses completed at the other institution,
  - o the official transcript of the courses issued by the institution,

Students are strongly encouraged to seek approval of credit transfer within one month of the start of their first term.

- Approval of credit transfer is contingent upon achieving a minimum passing grade equivalent to AUB's grade of C+ (2.3) in each course as determined by the Undergraduate Curriculum Committee of the relevant faculty.
- Credits transferred from other institutions will show as 'Pass' on the AUB transcript and will not be part of the calculation of the GPA.
- Transferred major credits may not exceed 50% of the total major requirements.

Transfer within the University

Transfer within the same faculty – intra-faculty transfer

Students who wish to transfer from one major to another in the same faculty may do so only after completion of at least 24 credits taken within two full terms of work in their current major by completing a change of major petition. Refer to the respective faculty section for faculty requirements.

Transfer from one faculty to another – inter-faculty transfer

Students who wish to transfer from one major to another in a different faculty may do so only after completion of at least 24 sophomore credits taken within two full terms of work in their current major by applying through the transfer dashboard available on AUBsis according to the deadlines specified in the University calendar.

Refer to the appropriate program section in the catalogue for more information on relevant transfer requirements.

Students who transfer will be required to follow the program requirements of the catalogue effective in the term they start their new major.

Dean's Honor List

To be placed on the dean's honor list at the end of a regular term, students must:

- earn at least 12 credits,
- have passed all courses and attained a term average of GPA 3.7 or be ranked in the top 10 percent of the class and have an overall average of GPA 3.3
- not have been subjected to any disciplinary action within the university during the term,
- be deemed worthy by the Dean to be on the honor list.

No student will be placed on the Dean's Honor List retroactively.

Probation

Placement on Academic Probation

Students are placed on academic probation if the student's overall average is less than GPA: 2.1 at the end of the second regular term, if the term average is less than GPA: 2.2 at the end of the third or fourth regular term, or if the term average is less than GPA: 2.3 in any subsequent regular term. If students on probation withdraw (W) the entire term, then that term is counted for continued probation purposes. The term in which the student is considered to be 'on probation' is the term that immediately follows that in which the student has earned the grades leading to probation.

Students are evaluated when the minimum number of credits at the end of second regular term is twenty-four (24) GPA hours. and twelve (12) GPA hours in each subsequent fall or spring term.

GPA hours earned during a summer or winter term are counted towards the term average of the next regular term. If the number of GPA hours taken in any regular term is less than twelve (12) GPA hours, it will be counted toward the term average of the next regular term.

Credit for incomplete courses will be included in the term in which the incomplete courses were taken. The evaluation for that term will be carried out as soon as the grades for the incomplete courses have been finalized.

For implementation purposes, the academic standing of students is represented by two attributes (a, b).

- The first attribute (a) represents the student's current academic status as follows:
  - 0: clear status
  - 1: student is currently on probation but was not on probation in the immediately preceding regular term
  - 2: student is currently on probation and was on probation in the immediately preceding regular term.
- The second attribute (b) represents the probation history of a student, i.e., the number of times the student has been placed on probation.

Students who are placed on probation are not eligible to receive financial aid.

Students who are placed on second continuous probation (2,2) or third non-continuous probation (1,3 or 2,3) will have their credit load limit reduced to 13 credits in a regular term and 6 credits in summer term.

Removal of Probation

Probation is removed when the student attains a term average of GPA 2.2 or more in the third or fourth regular term or a term average of GPA 2.3 or more in any subsequent regular term. The student is off probation during the term following the one in which such grades are earned.

Probation should be removed within two regular terms after the student is placed on probation.

Reactivation

Students in good standing who withdrew voluntarily shall be granted reactivation to their former faculty if the period between the end of the term or session of withdrawal and the beginning of the term for which readmission is sought is not more than four regular terms. The reactivation petition is available online (https://epetitions.aub.edu.lb/) and must be submitted to the concerned Faculty Dean's Office one month prior to the beginning of the term or summer session to which readmission is sought. Readmission is then automatic.

Dismissal

Students may be dismissed from the University for any of the following reasons:

- if the student's overall average is less than 1.0 at the end of the second regular term.
- if the student fails to clear academic probation within two regular terms, i.e., the student's academic status is (2,2) or (2,3), and the student has failed to remove the probation.
- if the student is placed on academic probation for a total of four regular terms (students can be dismissed for this reason even if it›s their final year at AUB); i.e., the student's academic status is (0,3) or (1,3), and the student is again placed on probation.
- if the student is deemed unworthy by the faculty to continue for professional or ethical reasons.

Refer to the admission's section on readmission if the student left the University for more than two years.

Readmission/Reactivation after dismissal

Students are normally considered for readmission/reactivation only if, after spending a year at another recognized institution of higher education and successfully completed a minimum of 24 credits, students are able to present a satisfactory record and recommendation through an online reactivation petition https://epetitions.aub.edu.lb. These students will be readmitted on strict probation. Transfer of credit is considered after departmental evaluation of a student's coursework.

- Students who have left the University while on probation remain on probation for one term and are required to take 12 or 13 credits only in regular terms and 6 credits only in summer term. If students do not remove probation at the end of that term, they are dropped from the faculty.
- No reactivation or readmission for winter sessions will be considered.

Academic Misconduct

Students who fail to properly credit ideas or materials taken from another commit plagiarism. Putting your name on a piece of work—any part of which is not yours— constitutes plagiarism, unless that piece is clearly marked and the work from which you have borrowed it is fully identified.

Plagiarism is a violation of the university's academic regulations (https://aub.policytech.eu/dotNet/documents/?docid=147&public=true) and is subject to disciplinary action.

Other types of academic misconduct specified in the code of conduct include cheating, in class disruption, and dishonesty.

Disclosure of Student Records

Information about notification of rights under FERPA can be found on the following link: http://www.aub.edu.lb/Registrar/Documents/ferpa.pdf

Graduation

Requirements

Students are strongly advised to prepare their registration schedules with their advisors to ensure graduation requirements are fulfilled. Failure to do so may mean students have to spend an additional term or more at AUB to complete graduation requirements.

Student are considered a candidate for graduation after fulfilling the following criteria:

- applied for graduation online
- completed all the program requirements
- achieved the minimum major GPA as per the concerned faculty
- met the AUB residence requirements
- attained an overall GPA of 2.3

The University graduates students who complete graduation requirements at the end of Fall (February), Spring (June) and Summer (October) terms. Students who complete their graduation requirements in the Winter session are considered Spring graduates.

Graduation with Distinction and High Distinction

For graduating students with distinction and high distinction, the University uses an honors cumulative GPA (HCGPA) from his/her final academic terms during which sixty (60) GPA credits or more have been completed at AUB. No partial counting of GPA hours is allowed. The HCGPA does not appear on the transcript and is only calculated for the purpose of distinction and high distinction.

To graduate with distinction, students must:

- have an honors cumulative GPA of 3.7 or higher
- and be recommended by her/his department for distinction

To graduate with high distinction, students must:

- have an honors cumulative GPA of 4.0 or higher
- and be recommended by her/his department for high distinction.

For purposes of graduation with distinction or high distinction, when students repeat a course, all the attempted courses that fall within the last 60 or more GPA hours are used in the calculation of the honors cumulative GPA (HCGPA). For transfer students, if the number of credits completed at AUB is less than 60, then the student will not be considered for graduation with distinction.

Graduation with Distinction and High Distinction for a Double Major

Refer to the previous section.

Graduation with Distinction and High Distinction for a Dual Degree

For each program within a dual degree, the calculation of honors cumulative GPA involves considering the minimum last 60 GPA hours that apply separately to fulfill the degree requirements of each program.

Starting with the last attended term and working backward:

1. Every course that is utilized to satisfy both degree requirements, including General Education courses, is included in the calculation of each program's Honors Cumulative GPA (HCGPA).
2. Courses that are specifically applied to fulfill the requirements of one of the two programs are exclusively considered for that program in its respective Honors Cumulative GPA (HCGPA).
3. Courses taken additionally to meet the minimum 30-credit requirement for earning dual degrees contribute to the computation of the HCGPAs for both programs.

This process continues until a minimum of 60 credits is achieved for each major, with no partial counting of GPA hours permitted.

Refer to the previous section for information regarding repeated and transferred courses.

Names on Diplomas and Degrees

Names on diplomas and degrees are spelled exactly as they appear on passports or official identity cards. According to the Lebanese Ministry of Education and Higher Education, names of Lebanese students should include first name, father's name and family name. Names on AUB diplomas and degrees appear both in Arabic and English. If a name on a passport or official identity card does not appear in both languages, then the name that does not appear in one language will be spelled on AUB diplomas and degrees according to the personal preference of the student.
Once a degree is issued the name cannot be changed. All AUB degrees issued for the same student must have the same spelling in both English and Arabic.

Commencement Exercises

Commencement exercises are held once per year at the end of the Spring term. Students who graduate in Spring or in the immediately previous Summer and Fall terms may participate in the commencement exercises.

Students who lack three credits or fewer for graduation and are registered for them in the summer term are eligible to march in the yearly commencement exercises provided that they apply online and get approval. The online petition type is "Intention to March in the Commencement Ceremony".

Students are allowed to march in the commencement exercises only once per degree.

Recognition of AUB Degrees by the Lebanese Ministry of Education and Higher Education (MEHE)

The Lebanese Ministry of Education and Higher Education (MEHE) recognizes degrees awarded by the American University of Beirut provided students are admitted on the basis of the Lebanese Baccalaureate, or its equivalent, as determined by the Lebanese Ministry of Education and Higher Education.

The MEHE requires a minimum number of credits at or beyond the sophomore level to be completed after the freshman equivalence date. This number is determined by subtracting 30 required freshman or articulated credits from the total required credits.

The MEHE does not yet recognize online degrees/diplomas.

It is the responsibility of students to ensure the degrees they receive from AUB are duly evaluated by their respective governments.

The AUB degrees are registered with the State of New York and will be recognized by it through a process managed by AMIDEAST. For details refer to the website of the Office of the Registrar.

Faculty of Agricultural and Food Sciences (FAFS)

Undergraduate Program

Officers of the Faculty

Fadlo R. Khuri	President of the University
Zaher Dawy	Provost
Ammar Olabi	Interim Dean
Yaser Abunnasr	Associate Dean
Bradley Jon Tucker	Registrar
Antoine Sabbagh	Director of Admissions
Lokman Meho	University Librarian

Faculty Administrative Support

Nadine Abdelkhalek	Career Services Officer
Alhan Shamseddine	Assistant to the Dean for Operations
Caroline Rajeh	Research Support Officer
Tharwat Haddad	Student Record Officer
Laila Houri	Financial and Facilities Manager
Wafa Khoury	Executive Officer
Maya Nabhani Zeidan	Director of Continuous Academic Improvement

Coordinators of Undergraduate Programs

Mohamad Ghassan Abiad	Coordinator of Undergraduate Studies Program, Food Science and Management Program
Ali Chalak	Coordinator of Undergraduate Studies Program, Agribusiness Program
Mohamad Talal Farran	Coordinator of Undergraduate Studies

Historical Background

Basic university-level courses in agriculture were offered by the School of Arts and Sciences at AUB as early as 1914. Between the 1930s and 1940s, the university fulfilled its commitment to improving the livelihood of the less fortunate through the creation of the Institute of Rural Life. The Institute brought together students and faculty from various university schools and departments to implement improvement projects in rural health, education, and farming. The School of Agriculture was established in 1952, along with the Advancing Research, Enabling Communities (AREC), a 100-hectare facility located in the Bekaa region 80 km away from the main AUB campus. The School offered a four-year program leading to a BS degree in Agriculture and the Diploma of Ingénieur Agricole and offered a one-year Technical Vocational Training (TVT) course, offered to government extension agents from 1956 to 1971. These programs contributed greatly to building the capacity of agricultural scientists and technicians from the Middle East region. A graduate program leading to the MS in Agriculture was initiated in 1956.

The importance of food and nutrition and their linkage to agriculture at AUB was recognized in the late 1970s. The school, which had become the Faculty of Agricultural Sciences in 1958,

was renamed the Faculty of Agricultural and Food Sciences (FAFS) in 1979, and a three-year BS program in Nutrition and Dietetics (NTDT) was initiated in 1980. An eleven-month Dietary Internship program was established at the AUB Medical Center in 1983. The program proved very successful and grew rapidly to become a significant component of FAFS. Global and regional changes in the role and functions of agriculture, nutrition and food created a demand for new courses. FAFS responded by launching several new programs. In 2012, a Bachelor of Landscape Architecture was introduced to replace the BS program in Landscape Design and Eco-Management, which started in 2000. The BS program in Food Sciences and Management was launched in October 2002 in response to the rapid expansion of the agrifood industry in Lebanon and the region. Lastly, the importance of entrepreneurship and the need to develop efficient and effective food value chains in the region led to the initiation of the Agribusiness program in February 2009.

Mission

The mission of FAFS is to foster sustainable enhancement of the health and well-being of people and nature throughout Lebanon and the region. To achieve its goals, the faculty uses basic and applied research as well as student-centered learning to prepare leaders and agents of change to address issues of local and global relevance at the nexus of human nutrition, food security and the sustainable use of resources.

Vision

FAFS is a reference academic center specialized in issues of relevance to the Middle East related to agriculture, food, nutrition, and the environment for the enhancement of livelihoods, human health, and well-being.

Undergraduate Programs

Six undergraduate programs are offered by FAFS:

BS in Agriculture and the Diploma of Ingénieur Agricole

The BS in Agriculture and the Diploma of Ingenieur Agricole is a four-year multidisciplinary program with the objective of producing graduates who become:

1. Agricultural Engineers and professionals with central positions, who create sustainable and ethical solutions and enhance knowledge in various sub-disciplines of Agriculture in local, regional, and global practices.

2. Graduates who attend and complete advanced degrees at top universities worldwide.

3. Leaders and innovators in their profession and serving their community.

The program trains students in the various theoretical and practical aspects of agricultural sciences. It prepares students to address current agricultural issues at the regional and global levels. It prepares students to address current agricultural issues at the regional and global levels using their scientific knowledge to improve production and protect the environment. Specifically, the program aims to develop students' understanding of the principles and practices of sustainable agriculture and its role in food production, environmental conservation, and community development. Students will build the necessary skills to design, implement, and evaluate agricultural systems and technologies that are technically and scientifically effective, but also economically, socially, and environmentally sustainable. Through critical thinking and problem-solving, students will analyze and address the complex challenges facing agriculture and food systems, against a backdrop of mounting climate change and food security vulnerabilities. Additionally, students will gain an understanding of the political, economic, and social factors that shape agricultural policies and practices and be able to advocate for sustainable and climate-smart solutions. The program emphasizes the importance of hands-on experience through internships, research projects, or other field-based learning opportunities, and the use of technology to improve the performance of agriculture and food systems. Students will gain an understanding of the relationship between agriculture and the environment, human health and economic development. In addition, the program enhances the ability of its graduates to manage farming operations and agricultural businesses.

BS in Nutrition and Dietetics (NTDT)

This is a three-year program, which will lead to a BS degree in Nutrition and Dietetics (NTDT). The NTDT's mission statement is to enhance the nutritional well-being and health of individuals, families, and populations through the promotion of scholarship in human nutrition and dietetics. The program is science-oriented, student-centered, and committed to excellence in teaching, training, research, and outreach service. The core values encompass the development of human potential and provide a collegial environment that fosters the professional growth of students for a career in nutrition and dietetics. This diverse and dynamic profession integrates human nutrition, food service administration, food science, biology, chemistry, physiology, and interpersonal skills.

BS in Nutrition and Dietetics Coordinated Program (NDCP)

This is a four-year program that leads to a BS degree in Nutrition and Dietetics Coordinated Program (NDCP). The program has a concentration in Medical Nutrition Therapy (MNT) and combines theoretical and experiential learning in Nutrition and Dietetics with at least 1200 hours of supervised practice in affiliated medical facilities. The proposed educational framework is based on the knowledge, skills, and core competencies established by the

Accreditation Council for Education in Nutrition and Dietetics (ACEND) for entry-level dietitians. Students are first admitted to the didactic Nutrition and Dietetics program and then apply to the NDCP towards the end of their sophomore year in Nutrition and Dietetics after the completion of at least 30 credits. AUB's NDCP has been granted candidacy for full accreditation status by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics, (120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-0040 ext. 5400. Website: http://www.eatright.org/ACEND).

This verifies that the program is equivalent and comparable in content and experience to United States-based programs meeting the ACEND accreditation standards. The accreditation makes students eligible to sit for the Commission on Dietetic Registration (CDR) examination for dietitians in the United States in order to obtain the Registered Dietitian (RD) status. The mission of the NDCP is to equip graduates with the knowledge, expanded skills and intellectual maturity to become progressive, innovative and inter-professional practitioners in the dietetic profession, capable of serving the public through the promotion of optimal nutrition, health and well-being and to serve the profession and larger community through public service and leadership.

More specifically, the program involves several interrelated dimensions and is:

- dedicated to providing quality education that prepares students for competent practice and current and future roles in the dietetic profession;
- committed to facilitating the intellectual, personal, and professional growth and lifelong learning of students;
- committed to developing critical thinking, problem-solving and leadership skills to prepare students for the challenges of an evolving diverse community and workplace;
- committed to providing integration of theory with the application of learning through a sequence of supervised practice experiences that encourage student self-evaluation and self-direction;
- dedicated to preparing students with added proficiency in providing nutrition education to a variety of clients;
- committed to providing an environment for students to conduct research and develop professional attitudes, maturity, and an ethical understanding of professional practice, thereby improving the dietetics practice; and
- committed to preparing competent nutrition professionals who perform in adherence to the Code of Ethics for the Profession of Dietetics.

Goals and Expected Outcomes of the NDCP

The goals of the NDCP are listed below; each is followed by supporting program objectives.

- NDCP provides quality didactic and supervised practice learning experiences that prepare graduates to be competent entry-level dietitians: At least 80 percent of students (with GPA 3.3) who enter the NDCP will successfully complete the program and receive a verification statement within four and a half years of enrolment.

- Over a period of five years, at least 80 percent of all graduates of the NDCP who sit for the colloquium/RD exam will pass the first time they take it.

- At least 90 percent of responses that evaluate the competencies attained from the NDCP will meet or exceed a rating of 3 on a 1–5 scale.

- At least 90 percent of ratings of professional preparation from the NDCP graduate's perspective will reach a rating of at least 3 on a 1–5 scale.

- At least 90 percent of ratings of professional knowledge from the employer's perspective will reach a rating of at least 3 on a 1–5 scale.

- NDCP prepares graduates who will commit to improving the quality of life of the community through improved health and well-being.

- Within five years of graduation from the NDCP, employment data will demonstrate that at least 70 percent of all graduates who sought employment will be employed in Lebanon or the Middle East region in a health-related position that requires nutrition expertise.

- NDCP prepares graduates who will be successfully employed in their fields, attend graduate school or pursue other career options: At least 80 percent of NDCP graduates who have sought higher education will pursue an advanced degree within 12 months of graduation.

- At least 80 percent of NDCP graduates who have sought employment in dietetics will be employed within 12 months of program completion.

- At least 80 percent of employers will indicate that they would hire a graduate of the American University of Beirut NDCP in Nutrition and Dietetics.

Program outcome data are available from the program director upon request.

BS in Food Science and Management

This is a specialized three-year program offered by FAFS to prepare graduates to satisfy the needs of food industries and establishments in the region. Graduates of this program do not receive the Diploma of Ingénieur Agricole.

BS in Agribusiness

The BS in Agribusiness is a three-year cross-disciplinary program designed to provide students with comprehensive knowledge in the decision-making processes of business and the technical aspects of modern agriculture and food systems. Graduates of this program do not receive the Diploma of Ingénieur Agricole.

Admission

AUB admits students from a twelve-year schooling system, starting with elementary 1. Students holding diplomas from a twelve-year secondary school system may gain admission to the Faculty of Agricultural and Food Sciences by completing the freshman program at AUB or its equivalent elsewhere. Those coming from the freshman program should follow the below table:

Major Requirements / Useful Electives
Agribusiness Completion of MATH 101, any combination of science courses totaling 9 credits, CHEM 200, MATH 204, and courses in the humanities and a cumulative GPA of at least 2.3 in the freshman year
Agriculture Completion of MATH 101, CHEM 101, CHEM 101L, and BIOL 101, CHEM 200, MATH 204 and courses in the humanities and a cumulative GPA of at least 2.3 in the freshman year
Food Science and Management Completion of MATH 101, CHEM 101, CHEM 101L, and BIOL 101, CHEM 200, MATH 204, and courses in the humanities and a cumulative GPA of 2.7 in the freshman year
Nutrition and Dietetics Completion of MATH 101, CHEM 101, CHEM 101L, and BIOL 101 CHEM 200, SOAN 201, and courses in humanities and a cumulative GPA of at least 3.0 in the freshman year. (Admission is by selection of the most promising eligible applicants)

Students from a twelve-year secondary school system must hold the Lebanese Baccalaureate Part II in general sciences, life sciences, or sociology and economics, or the equivalent if they come from another country. Holders of Baccalaureate Part II in Humanities may be considered for admission provided they take an additional course, MATH 203. To be considered for admission, students applying for transfer from another faculty or university must have a minimum grade point average of GPA: 2.3 for Agriculture and Agribusiness, and GPA: 3.0 for Nutrition, and GPA: 2.7 for Food Sciences and Management. Admission is by selection of the most promising eligible applicants. For complete and detailed information regarding admission to the university, including recognized certificates, see the Admissions section in this catalogue.

Requirements for BS in Nutrition and Dietetics Coordinated Program (NDCP)

Students are first admitted to the three-year Nutrition and Dietetics program. In addition, a separate application for the NDCP must be submitted during the second term of the sophomore year (upon completion of at least 30 credits). The selection of students for the NDCP is based on the cumulative average of the sophomore year GPA 3.3 or above, unless stated otherwise by the department) and completion of the prerequisite courses. Individuals interested in applying to the NDCP must contact the department for application details towards the end of the sophomore year.

A maximum of 20 students are admitted each year depending on practicum site availability. Students applying to the NFSC department for a second BS in Nutrition and Dietetics are not eligible for the NDCP.

Transfer to the Nutrition and Dietetics Coordinated Program (NDCP)

In order to be eligible for transfer into the Nutrition and Dietetics Coordinated Program (NDCP), students should first apply for transfer and be accepted into the Nutrition and Dietetics (NTDT) 3-year program. Upon being accepted into NTDT, interested students should fill out a separate application in order to apply for the Nutrition and Dietetics Coordinated Program (NDCP) and will then be considered based on the cumulative average of credits completed at AUB as well as the availability of spots in the NDCP.

Transfer into the NTDT Program

a) Transfer from Other Faculties at AUB to the Nutrition and Dietetics Program

Students enrolled at other faculties at AUB may apply for a transfer to the NTDT Program. To be eligible for an internal transfer, the applicant must:

- have completed at least 24 sophomore credits,
- not be on probation,
- and have achieved a minimum overall cumulative GPA of 3.0.

Applications of transfer students are evaluated and approved by the department of Nutrition and Food Sciences (NFSC) and the Admission Committee of the faculty. Admission into the program is by selection of the most promising eligible applicants. Top ranking students of the applying pool of students will be selected based on the number of available places in the NTDT for the term in question.

Upon approval of transfer, the student's complete program of study and course requirement is determined by the department.

b) Transfer from Other Universities to the Nutrition and Dietetics Program

Students currently pursuing an undergraduate degree at another university in Lebanon or

abroad may apply for transfer to the NTDT Program. To be eligible for admission to AUB and the NTDT Program, the applicant must:

- be transferring from an appropriately accredited university or institution of higher education recognized by AUB,
- have successfully completed at least 30 sophomore credits,
- and have achieved a minimum overall cumulative average equivalent to the AUB GPA of 3.0.

Applications of transfer students from other universities are evaluated and approved by the Department of Nutrition and Food Sciences (NFSC) and the Admission Committee of the faculty. Admission into the program is by selection of the most promising eligible applicants. Top ranking students of the applying pool of students will be selected based on the number of available places in the NTDT for the term in question.

As stated in the General University Academic Information section of the catalogue, applicants should meet the Readiness for University Studies in English before registration.

Upon approval of transfer, the student's complete program of study and course requirement is determined by the department. Transfer of courses from other universities is the prerogative of the NFSC department.

Applying to the NDCP After Transfer into the NTDT

a) Transfer students from other faculties within AUB

Transfer students from other faculties within AUB who are accepted into the Nutrition and Dietetics 3-year program should apply separately to the NDCP and may be considered for acceptance into the program based on the number of available places in the NDCP for the term in question after they:

- have successfully completed at least 30 credits at AUB,
- and have achieved a minimum overall cumulative GPA of 3.3 in courses taken at AUB.

Admission into the program is by selection of the most promising eligible applicants. Top ranking students of the applying pool of students will be selected based on the number of available places in the NDCP for the term in question.

b) Transfer students from other universities

Transfer students from other universities who are accepted into the Nutrition and Dietetics 3-year program should apply separately to the NDCP. These students may be considered for acceptance on the waiting list of the program based on the number of available places in the NDCP for the term in question after they:

- have successfully completed at least 30 sophomore credits,
- and have achieved a minimum overall cumulative average equivalent to the AUB GPA of 3.3.

It is important to note that credits/courses completed at another institution will not be granted equivalency credits/courses for the NDCP's core courses. Please refer to the appropriate section of the catalogue for the list of the program's core courses and their descriptions.

Requirements for Premedical Study

Students entering the Faculty of Agricultural and Food Sciences and who ultimately intend to enter the Faculty of Medicine must complete the premedical requirements as outlined in the Admissions section under the Faculty of Medicine in the Graduate Catalogue, page 550.

Graduation Requirements

Eligibility for Graduation

To be eligible for graduation with the degree of BS in Agriculture (AGRI), and the Diploma of Ingénieur Agricole, a student must:

- complete a minimum of 128 term credit hours (AGRI)
- complete a minimum of eight terms of residency (AGRI),
- achieve an overall minimum grade average of C+ (GPA 2.3), and
- be approved for graduation by the faculty.

To be eligible for graduation with the degree of BS in Nutrition and Dietetics (NTDT), BS in Food Sciences and Management (FSMT) or BS in Agribusiness (AGBU), a student must:

- complete a minimum of 97 term credit hours for the NTDT program: 97 term credit hours for the FSMT program and 96 term credit hours for the AGBU,
- complete a minimum of six terms of residency,
- achieve an overall minimum average grade of C+ (GPA 2.3), and
- be approved for graduation by the faculty.

To be eligible for graduation with the degree of BS in Nutrition and Dietetics Coordinated Program (NDCP), a student must:

- complete a minimum of 133 credits hours,
- complete a minimum of eight terms of residency,
- complete a minimum of 1200 hours of supervised practice in an affiliated hospital,
- achieve an overall minimum average grade of B+ (GPA 3.3) in each of the three years of NDCP,
- achieve an overall minimum average grade of B+ (GPA 3.3) in the supervised practice, and
- complete the program within four and a half years of enrolment in NDCP.

Failure to meet the above NDCP graduate requirements will result in dismissal from the NDCP program in which case students will graduate with a BS in Nutrition and Dietetics (NTDT).

Minors

Minors in Nutrition and Dietetics and Food Science and Management

The Nutrition and Food Sciences Department offers two minors: a minor in Nutrition and Dietetics and a minor in Food Sciences and Management with a minimum of 16 credits/program.

Students already working on a bachelor's degree outside Nutrition and Dietetics (NTDT) or Food Sciences and Management (FSMT) and who wish to obtain a minor in NTDT or FSMT must apply to the relevant minor before taking any course in the requested minor. The Department of Nutrition and Food Sciences evaluates all applicants for a minor and makes recommendations to the Academic and Curriculum Committee (ACC).

A student is eligible to be considered for a minor in either program (major) after completing 24 credit hours in her/his major with a cumulative grade average of B, a GPA of 3.0.

The courses required for a minor in Nutrition and Dietetics are NFSC 221, NFSC 222, NFSC 240, NFSC 265, NFSC 274, NFSC 285, and NFSC 281. Additional courses may be required from Agriculture and Food Sciences and Management students to replace required courses common to the major and minor and/or to fulfill pre-requisite courses.

The courses required for a minor in Food Sciences and Management are NFSC 265, NFSC 278, NFSC 282, NFSC 288, MNGT 215, and MKTG 210. Additional courses may be required from Agriculture and Nutrition and Dietetics students to replace required courses common to the major and minor and/or to fulfill prerequisite courses.

Minor in Agribusiness

The courses required for a minor in Agribusiness are AGBU 210/MKTG 210, AGBU 213, AGBU 229 or AGBU 236, AGBU 239, AGBU 240, AGBU 248/INFO 200, and AGBU 292.

Minor in Food Systems

Food security, climate change, and depletion of natural resources are now major concerns at the national and global levels. The vital need for sustainable production techniques able to reconcile economic profitability and environmental preservation is exerting increasing pressure on public policies and agendas. The interdependence of these concerns requires the development of a comprehensive and multidisciplinary approach to food systems.

Goal

This interdisciplinary minor in Food Systems equips students with the knowledge and skills required to develop a comprehensive view and understanding of the different yet interdependent stages of food systems including food production, processing, marketing, distribution, and consumption. 18 credit hours are required; 3 credits of each of the majors listed below.

List of Courses for the Minor in Food Systems

NFSC 220, NFSC 252, LDEM 211, AVSC 220, AGSC 203 and AGBU 210.

Learning Outcomes

- Identify key stages of food-product development
- Acquire knowledge and practical skills in land preparation, farm irrigation methods and water measurement techniques
- Develop an awareness of safe working environment and monitoring sustainable practices in livestock and field crop production
- Determine the usefulness and limitations of various techniques in food production and processing practices and assessing their impact on human health
- Understand concepts of environmental horticulture and their role in promoting nature conservation
- Develop marketing and distribution strategies to promote food products

For more information regarding Minors, please refer to the General University Academic Information section of the catalogue.

Second BS Degree

To obtain a second BS in Agriculture and the Diploma of Ingénieur Agricole, a student must:

- Complete all AGRL III and AGRL IV courses, including all FAFS electives and Cultures and Histories courses. Applicants who have a BS degree in Food Science and Management, Agribusiness, Biology, Chemistry, or Environmental Health do not need to take any additional prerequisite courses.

Holders of BS degrees from other majors will be required to:

- Complete additional prerequisite courses as recommended by the Admissions Committee and approved by the Academic and Curriculum Committee for holders of BS degrees other than the above-mentioned majors.
- Complete at least five terms of residency at FAFS.

To obtain a second BS in Agribusiness, a student must complete:

- A minimum of 54 credits while registered in FAFS, including all AGBU II and AGBU III required core courses listed in this catalogue (of which up to 15 credits can be from transferred course credits).
- Additional prerequisite courses as recommended by the Admissions Committee and approved by the Academic and Curriculum Committee.

To obtain a second BS in Nutrition and Dietetics, a student must complete:

- A minimum of 52 credits while registered at FAFS, including all NTDT II and NTDT III required core courses listed in this catalogue (of which 15 credits can be transferred course credits).
- Additional prerequisite courses as recommended by the Admissions Committee and approved by the Academic and Curriculum Committee.

- At least three terms of residency at FAFS.

To obtain a second BS in Food Science and Management, a student must complete:

- A minimum of 53 credits while registered in FAFS, including all FSMT II and FSMT III required core courses listed in this catalogue (of which up to 15 credits can be from transferred course credits).
- Additional prerequisite courses as recommended by the Admissions Committee and approved by the Academic and Curriculum Committee.
- At least three terms of residency at FAFS.

Second BS Degree in Agriculture for Agribusiness Students

A candidate with a bachelor's degree in Agribusiness or Food Science and Management wishing to obtain a second degree in Agriculture and the Diploma of Ingénieur Agricole must complete a minimum of 53 credit hours with a minimum residency period of two semesters and the following course requirements with a minimum GPA of 2.3.

List of Courses for Second BS Degree in Agriculture for Agribusiness Students:

Semester	Credit hours	Courses
Fall	15	AGSC 220 (Principles of Plant Physiology), AGSC 230 (Crop Systems), AGSC 233 (Plant Health I), AVSC 243 (Genetics and Biotechnology), AVSC 275 (Anatomy and Physiology of Farm Animals)
Spring AREC	16	AGSC 222 (Farm Practices,) AVSC 223 (Livestock Systems), AGSC 244 (Agricultural Water Technologies), AGSC 245 (Plant Health II), AGSC 246 (Intensive Agriculture), AGSC 250 (Organic Farming)
Summer AREC	7	AGSC 223 (Agricultural Project and Entrepreneurship), AGSC 247 (Farm Power and Alternative Energy), AGSC 235 (Agricultural Extension in Development)
Fall	15	AGSC 249 (GIS for Agriculture), AGSC 265 (Soil Fertility), AGSC 234 (Chemicals in Agriculture) + two concentration courses in AGSC or AVSC
Total	53	

Second BS Degree in Agriculture for Food Science and Management Students

A candidate with a bachelor's degree in Agribusiness or Food Science and Management wishing to obtain a second degree in Agriculture and the Diploma of Ingénieur Agricole must complete a minimum of 53 credit hours with a minimum residency period of two semesters and the following course requirements with a minimum GPA of 2.3

List of Courses for Second BS Degree in Agriculture for FSMT Students:

Semester	Credit hours	Courses
Fall	15	AGSC 207 (Land and Water Resources), AGSC 220 (Principles of Plant Physiology), AGSC 230 (Crop Systems), AGSC 233 (Plant Health I), AVSC 275 (Anatomy and Physiology of Farm Animals)
Spring AREC	16	AAGSC 222 (Farm Practices,) AVSC 223 (Livestock Systems), AGSC 244 (Agricultural Water Technologies), AGSC 245 (Plant Health II), AGSC 246 (Intensive Agriculture), AGSC 250 (Organic Farming)
Summer AREC	7	AGSC 223 (Agricultural Project and Entrepreneurship), AGSC 247 (Farm Power and Alternative Energy), AGSC 235 (Agricultural Extension in Development)
Fall	15	AGSC 249 (GIS for Agriculture), AGSC 265 (Soil Fertility), AGSC 234 (Chemicals in Agriculture), AVSC 271 (Animal Nutrition), 1 concentration course in AGSC or AVSC
Total	53	

Double Major

Students may, upon approval of the faculty concerned, earn a double major if the two majors fall within the same degree structure (that is, both are BS majors) and if the graduation requirements for both majors are met simultaneously. The student must also satisfy the requirements of both majors and complete at least 15 credit hours over and above the requirements of the first major. Note that both majors must lead to the same bachelor's degree and one diploma will be issued indicating both majors.

For more information, please refer to the General University Academic Information section of the catalogue.

Dual Degree

Students may, upon approval of the faculty concerned, complete the requirements for a second degree while registered in another faculty at AUB. In such a case, a student will be granted two degrees at the same time of graduation. If tuition fees differ, students will pay the higher of the two fees.

For more information, please refer to the General University Academic Information section of the catalogue.

Transfers

To transfer to the Faculty of Agricultural and Food Sciences from another faculty or university, course credits pertinent to the agricultural curriculum may be transferred at the discretion of the Academic and Curriculum Committee. However, advanced standing can be considered only for students who transfer from an agriculture program of another recognized institution of higher learning. Transfer students from faculties within AUB to FAFS are allowed to transfer a maximum of two terms toward the residency requirements at FAFS based on the rate of equating each 12 credits of transferable courses taken at AUB to one residency term. For purposes of residency requirements, two summer sessions are equivalent to one term.

Students wanting to transfer to another faculty must take at least 50 percent of their courses at FAFS including one FAFS course (2 or 3 cr.) in the corresponding major per term. Students who do not register for at least 50 percent of courses required by their major in the first term will automatically be given the status of majorless in the second term. A student should transfer after two terms; if s/he fails to secure acceptance to the desired major by the end of the second term, s/he will be dropped from the faculty.

Transfer of Courses

Transfer of basic science courses taken at AUB with a minimum grade of (D or 1.0) is allowed if these are also required courses in the core programs of FAFS. A minimum grade of (C+ or 2.3) is required for transfer of elective courses. Students wishing to transfer one or more required or elective courses should submit a written request to the Academic and Curriculum Committee.

Elective Courses

Candidates for the degree of BS in Agriculture must complete 21 credits of elective courses: 9 credits of concentration courses in FAFS, 6 credits in the Cultures and Histories, 3 credits in Human Values, and 3 credits in Societies and Individuals.

Candidates for the degrees of BS in Nutrition and Dietetics and BS in Food Sciences and Management must complete a minimum of 9 credits in Cultures and Histories and 3 credits in Human Values.

Candidates for the degree of BS in Agribusiness must also complete 9 credits in Cultures and Histories and 3 credits in Human Values.

One elective for all majors should cover the theme of Social Inequalities.

Academic Rules and Regulations

Changes made after the publication of this catalogue will be available through academic advisors or coordinators.

Refer to General University Academic Information in this catalogue for information on the following: maximum course loads (under Credit Loads), dismissal from the faculty and readmission, classes and laboratories (under Attendance), incomplete grades (under Incompletes), examinations and quizzes (under Attendance), withdrawal from courses, students not working for a degree (under Categories of Students), repeating courses, placement on academic probation and removal from academic probation.

Students enrolled in the BS in Nutrition and Dietetics (Coordinated Program) should refer to the Nutrition and Dietetics Coordinated Program Student Handbook for specific program policies and procedures that is provided by the NDCP progra m director to the student.

Classification and Promotion

BS in Agriculture and Diploma of Ingénieur Agricole

For clear promotion from year I to year II, a student must complete a minimum of 27 credits. For promotion from year II to year III, a student must complete a minimum of 58 credits. For promotion from year III to year IV, a student must complete a minimum of 98 credits. All such credits should be from courses specified in the regular program.

BS in Nutrition and Dietetics or in Food Science and Management

For clear promotion from year I to year II, a student must complete a minimum of 30 credits. For promotion from year II to year III, a student must complete a minimum of 63 credits. All such credits should be from courses specified in the regular program.

BS in Nutrition and Dietetics-Coordinated Program

For clear promotion from year I to year II, a student must complete a minimum of 30 credits. For promotion from year II to year III, a student must complete a minimum of 63. For promotion from year III to year IV, a student must complete a minimum of 97 credits. All such credits should be from courses specified in the regular program.

BS in Agribusiness

For clear promotion from year I to year II, a student must complete a minimum of 30 credits. For promotion from year II to year III, a student must complete a minimum of 60 credits. All such credits should be from courses specified in the regular program.

Eligibility for the Regular AREC Program

To be eligible to enroll in the regular program at AREC during the third year of Agriculture, a student must:

- Complete a minimum of 58 credits by the end of the first term of Agriculture III with a cumulative GPA of 2.3 or higher and must not have accumulated more than 12 credits of failed and/or missed courses (of which no more than 6 credits are failed courses) specified in the regular program.
- Be approved for such action by the Academic and Curriculum Committee.

Curricula

Curriculum for the BS Degree in Agriculture and Diploma of Ingénieur Agricole

A minimum of 128 credits are required for graduation.

Year I

First term		Credits
AGSC 205	The Food Odyssey (Cultures and Histories)	3
BIOL 200	Diversity of Life (Understanding the World)	4
CHEM 208	Brief Survey of Organic Chemistry	3
ENGL 203	Academic English	3
CMPS 209	Computers and Programming for the Sciences	3
		Total 16
Second term		**Credits**
ARAB	Understanding Communication - Arabic	3
NFSC 261	Introductory Biochemistry	3
AGSC 206	Agriculture and the Environment	3
MATH 204 or 201	Mathematics for Social Sciences II (Quantitative Reasoning)	3
ENGL 204	Advanced Academic English	3
		Total 15

Year II

First term		Credits
AGSC 212	Microeconomic Theory of Food and Farming (Societies and Individuals)	3
AGSC 207	Land and Water Resources	3
AVSC 275	Anatomy and Physiology of Farm Animals	3
AVSC 243	Genetics and Biotechnology	3
AGSC 220	Principles of Plant Physiology	3
		Total 15
Second term		**Credits**
STAT 210/ NFSC 210	Elementary Statistics for the Sciences/ Statistics in Nutrition and Food Sciences	3
AVSC 224	Agricultural Microbiology	3
AGBU 213	Legal and Policy Aspects of the Agriculture Sector	3
AGSC 225	Rural Community Development	3
Cultures and Histories Elective (History of Ideas)		3
		Total 15

Year III

First term		**Credits**
AGSC 230	Crop Systems	3
AGSC 233	Plant Health-I	3
AGSC 234	Chemicals in Agriculture	3
AGSC 252	Conservation Agriculture	3
AGBU 240	Career Planning Workshop for Agribusiness	0
Human Values Elective		3
		Total 15
Second term (AREC)		**Credits**
AGSC 222	Farm Practices	1
AGSC 244	Agricultural Water Technologies	3
AGSC 245	Plant Health II	3
AGSC / AVSC 250	Organic Farming	3
AVSC 223	Livestock Systems	3
AGSC 246	Intensive Agriculture	3
AGBU 256	Summer Internship	1
		Total 17
Summer Session (AREC)		**Credits**
AGSC 223	Agricultural Project and Entrepreneurship	2
AGSC 247	Farm Power and Alternative Energy	3
AGSC 235	Agricultural Extension in Development	2
		Total 7

Year IV

First term		**Credits**
AGSC 249	GIS for Agriculture	3
AGSC 257	Emerging Issues in Agriculture: Networking with the Private Sector	1
AVSC 271	Animal Nutrition	3
AGSC 265	Soil Fertility	3
Societies and Individuals Elective		3
		Total 13
Second term		**Credits**
AGSC/AVSC	Concentration Courses	9
AGSC 298	Capstone Course: From Seed to Table	3
Cultures and Histories Elective		3
		Total 15

Curriculum for the BS Degree in Nutrition and Dietetics (NTDT)

A minimum of 97 credits are required for Graduation.

NTDT I

First term		Credits
BIOL 201	General Biology I	4
CHEM 200	Basic Chemistry and Applications (Understanding the World)	3
CHEM 205	Introductory Chemistry Laboratory	2
ENGL 203	Academic English	3
NFSC 221	Basic Nutrition	3
		Total 15
Second term		**Credits**
CHEM 208	Brief Survey of Organic Chemistry (Understanding the World)	3
CHEM 209	Introductory Organic Laboratory	2
ENGL 204	Advanced Academic English	3
PHYL 246	Physiology for Nursing Degree Students and Undergraduates	4
PSYC 201	Introduction to Psychological Science	3
		Total 15

NTDT II

First term		Credits
AGSC 212	Microeconomics Theory of Food and Farming (Societies and Individuals)	3
NFSC 274	Human Nutrition and Metabolism	3
NFSC 290	Food Service Management	3
NFSC 261	Introductory Biochemistry	3
NFSC 240	Nutrition Status Assessment	2
MNGT 215	Fundamentals of Management and Organizational Behaviors (Societies and Individuals)	3
		Total 17
Second term		**Credits**
ARAB 201 or higher	Understanding Communication - Arabic	3
NFSC 285	Nutrition in the Life Cycle	2

NFSC 281	Nutrition in the Life Cycle Lab for NTDT	1
NFSC 265	Food Chemistry	3
NFSC 267	Food Analysis	2
NFSC 229	Menu Planning	1
Cultures and Histories (History of Ideas)		3
		Total 15

NTDT III

First term		**Credits**
NFSC 210	Statistics in Nutrition and Food Sciences	3
NFSC 222	Community Nutrition (Community-Engaged Learning)	3
NFSC 277	Food Microbiology	3
NFSC 292	Medical Nutrition Therapy I	3
NFSC 294	Medical Nutrition Therapy Lab I for NTDT	1
NFSC 299A	Projects in Nutrition and Food Sciences	0
Cultures and Histories Elective		3
		Total 16
Second term		**Credits**
CMPS 209	Computers and Programming for the Sciences (Quantitative Reasoning)	3
NFSC 287	Food Processing	2
NFSC 289	Food Processing Lab	1
NFSC 293	Medical Nutrition Therapy II	3
NFSC 295	Medical Nutrition Therapy Lab II for NTDT	1
NFSC 296	Current Topics in Food Sciences and Nutrition	1
NFSC 299B	Projects in Nutrition and Food Sciences	2
Human Values Elective		3
Cultures and Histories Elective		3
		Total 19

Curriculum for the BS Degree in Nutrition and Dietetics Coordinated Program (NDCP)

A minimum of 133 credits are required for Graduation.

NDCP I

First term		Credits
BIOL 201	General Biology I	4
CHEM 200	Basic Chemistry and Applications (Understanding the World)	3
CHEM 205	Introductory Chemistry Laboratory	2
ENGL 203	Academic English	3
NFSC 221	Basic Nutrition	3
		Total 15
Second term		**Credits**
CHEM 208	Brief Survey of Organic Chemistry (Understanding the World)	3
CHEM 209	Introductory Organic Laboratory	2
ENGL 204	Advanced Academic English	3
PHYL 246	Physiology for Nursing Degree Students and Undergraduates	4
PSYC 201	Introduction to Psychological Science	3
		Total 15

NDCP II (Juniors)

First term		**Credits**
AGSC 212	Microeconomics Theory of Food and Farming (Societies and Individuals)	3
NFSC 240	Nutrition Status Assessment	2
NFSC 261	Introductory Biochemistry	3
NFSC 274	Human Nutrition and Metabolism	3
MNGT 215	Fundamentals of Management and Organizational Behavior (Societies and Individuals)	3
Cultures and Histories (History of Ideas)		3
		Total 17
Winter Session		**Credits**
NFSC 225A	Job Shadowing	0
		Total 0
Second term		**Credits**
ARAB 201 or higher	Understanding Communication – Arabic	3
NFSC 285	Nutrition in the Life Cycle	2
NFSC 265	Food Chemistry	3
NFSC 267	Food Analysis	2
NFSC 286	Nutrition in the Life Cycle Lab for NDCP	1
NFSC 290	Food Service Management	3
NFSC 229	Menu Planning	1
		Total 15
Summer Session		**Credits**
CMPS 209	Computers and Programming for the Sciences	3
NFSC 225B	Job Shadowing	0
Cultures and Histories Elective		3
		Total 6

NDCP III (Seniors)

First term		**Credits**
NFSC 210	Statistics in Nutrition and Food Sciences	3
NFSC 222	Community Nutrition (Community-Engaged)	3
NFSC 277	Food Microbiology	3
NFSC 292	Medical Nutrition Therapy I	3
NFSC 279	Medical Nutrition Therapy Lab I for NDCP	1
NFSC 299A	Projects in Nutrition and Food Sciences	0
Human Values Elective		3
		Total 16
Winter Session		**Credits**
NFSC 298W	Dietetic Practicum	1
		Total 1
Second term		**Credits**
NFSC 287	Food Processing	2
NFSC 289	Food Processing Lab	1
NFSC 293	Medical Nutrition Therapy II	3
NFSC 297	Medical Nutrition Therapy Lab II for NDCP	1
NFSC 224	Advanced Nutrition Principles and Practices	1
NFSC 296	Current Topics in Food Sciences and Nutrition	1
NFSC 299B	Projects in Nutrition and Food Sciences	2
NFSC 275	Quantity Food Production	2
Cultures and Histories Elective		3
		Total 16
Summer Session (May-June)		**Credits**
NFSC 298SU	Dietetic Practicum	1
		Total 1

NDCP IV

First term		Credits
NFSC 283	Nutrition Education and Communication	3
NFSC 284A	Seminar in Clinical Dietetics	1
NFSC 298F	Dietetic Practicum	13
		Total 17
Second term		**Credits**
NFSC 284B	Seminar in Clinical Dietetics	1
NFSC 298S	Dietetic Practicum	13
		Total 14

Curriculum for the BS Degree in Food Science and Management

A minimum of 97 credits are required for Graduation.

Food Science and Management I

First term		Credits
BIOL 200	Diversity of Life	4
CHEM 200	Basic Chemistry and Applications (Understanding the World)	3
CHEM 205	Introductory Chemistry Laboratory	2
ENGL 203	Academic English	3
MATH 204	Mathematics for Social Sciences II (Quantitative Reasoning)	3
		Total 15
Second term		**Credits**
CHEM 208	Brief Survey of Organic Chemistry (Understanding the World)	3
CHEM 209	Introductory Organic Laboratory	2
ENGL 204	Advanced Academic English	3
AGSC 212	Microeconomics Theory of Food and Farming (Societies and Individuals)	3
NFSC 221	Basic Nutrition	3
Cultures and Histories (History of Ideas)		3
		Total 17

Food Science and Management II

First term		**Credits**
NFSC 210	Statistics in Nutrition and Food Sciences	3
NFSC 291	Elements of Food Engineering	3
NFSC 261	Introductory Biochemistry	3
NFSC 265	Food Chemistry	3
NFSC 267	Food Analysis	2
NFSC 277	Food Microbiology I	3
		Total 17
Second term		**Credits**
ACCT 210	Financial Accounting	3
ARAB 201 or higher	Understanding Communication - Arabic	3
CMPS 209	Computers and Programming for the Sciences	3
NFSC 272	Introduction to Food Service and Industries (Community-Engaged Learning)	2
NFSC 282	Food Quality Management	3
Human Values Elective		3
		Total 17
Summer Session		**Credits**
NFSC 280	Summer Training in Food Establishments	1
		Total 1

Food Science and Management III

First term		**Credits**
ACCT 215	Management Accounting	3
NFSC 278	Food Microbiology II	3
NFSC 288	Technology of Food Products	3
FINA 210	Business Finance	3
NFSC 299A	Projects in Nutrition and Food Sciences	0
Cultures and Histories Elective		3
		Total 15
Second term		**Credits**
MKTG 210	Principles of Marketing	3
NFSC 287	Food Processing	2
NFSC 289	Food Processing Lab	1
MNGT 215	Fundamentals of Management and Organizational Behavior	3
NFSC 296	Current Topics in Food Sciences and Nutrition	1
NFSC 299B	Projects in Nutrition and Food Sciences	2
Cultures and Histories Elective		3
		Total 15

Curriculum for the BS Degree in Agribusiness

A minimum of 96 credits are required for graduation.

Agribusiness I

First term		Credits
AGSC 204	Natural Sciences for Agribusiness (Understanding the World)	3
AGBU 211	Introduction to Agricultural Issues and Policies	3
CMPS 209	Computers and Programming for the Sciences (Quantitative Reasoning)	3
ENGL 203	Academic English	3
MATH 204	Mathematics for Social Sciences II (Quantitative Reasoning)	3
		Total 15
Second term		**Credits**
ACCT 210	Financial Accounting	3
AGSC 207	Land and Water Resources	3
AGSC 203	Crop Production and Protection	3
ARAB 201 or higher	Understanding Communication - Arabic	3
ENGL 204	Advanced Academic English	3
		Total 15

Agribusiness II

First term		Credits
ACCT 215	Management Accounting	3
AGSC 212	Microeconomics Theory of Food and Farming (Societies and Individuals)	3
AGBU 239	Agribusiness Communication Skills Workshop	0
NFSC 252	Food Processing	3
NFSC 210	Statistics in Nutrition and Food Sciences	3
Human Values Elective	To be chosen from PHIL 206 or PHIL 209	3
		Total 15
Second term		**Credits**
AGBU 210	Marketing in Agribusiness	3
ECON 212	Elementary Macroeconomic Theory (Societies and Individuals)	3
AGSC 253	Harvest and Post-harvest Issues and Strategies	3
AGBU 255	Field Study of the Rural Agro-economy (Community-Engaged Learning)	3
AVSC 220	Livestock Production (Understanding the World)	3
		Total 15
Summer Session		**Credits**
AGBU 229	Entrepreneurship in Agriculture (Theory + Project)	3
AGBU 256	Summer Internship	1
		Total 4

Agribusiness III

First term		Credits
AGBU 236	New Trends in Agricultural and Food Systems	3
AGBU 240	Career Planning Workshop for Agribusiness	0
FINA 210	Business Finance	3
INFO 200	Foundations of Information Systems	3
MNGT 215	Fundamentals of Management and Organizational Behavior	3
Cultures and Histories (History of Ideas) Elective		3
		Total 15
Second term		**Credits**
AGBU 213	Legal and Policy Aspects of the Agriculture Sector	3
AGBU 248	Operation Management for Agribusiness	3
AGBU 292	Agribusiness Final Year Project (capstone course)	5
Cultures and Histories Elective		3
Cultures and Histories Elective		3
		Total 17

Department of Agriculture (AGRI)

Chairperson:	Jaafar, Hadi
Professor Emeritus:	Kawar, Nasri
Professors:	Abou Jawdah, Yusuf; Farran, Mohamad; Haidar, Mustapha; Hamadeh, Shady
Adjunct Professor:	Mohtar, Rabi
Associate Professors:	Chalak, Ali; Jaafar, Hadi
Adjunct Associate Professor:	Chaaban, Jad
Assistant Professors:	El Kayal, Walid
Lecturer:	Jaber, Lina; Doughan, Youssef
Instructor:	Sobh, Hana

Undergraduate Program

The Department of Agriculture offers a multidisciplinary program with the objective of training students in the various theoretical and practical aspects of agricultural sciences and Agribusiness. Department graduates are prepared to successfully contribute to the agricultural research, business, and education programs in the region.

The agriculture (AGRI) program prepares students to become:

1. Agricultural Engineers and professionals with central positions, who create sustainable and ethical solutions and enhance knowledge in various sub-disciplines of Agriculture in local, regional, and global practices.

2. Graduates who attend and complete advanced degrees at top universities worldwide.

3. Leaders and innovators in their profession and serving their community.

Students will be trained to address current agricultural issues at the regional and global levels using their scientific knowledge to improve production and protect the environment. The department provides practical and up-to-date knowledge in plant production, plant health management, animal production and health, and land and water conservation. The department also trains students to become skilled farm operators and managers who are innovative and responsive to local and regional needs and who are capable of adapting to market changes and rising production costs.

The department offers two concentrations. A Concentration requires a total of 12 credits. Students in their final year may select 12 credits from the lists, which include courses in agricultural sciences and animal and veterinary sciences. Students who do not wish to do a concentration will be considered to be following the broader Agriculture sequence (Receive a Bachelor of Science in Agriculture and Diploma of Ingénieur Agricole with no concentration).

Undergraduate courses are offered in the areas of crop systems, agro-chemicals, farm power and alternative energy, plant health, organic and intensive agriculture, water technologies, conservation agriculture, soils, GIS in agriculture, agricultural economics and rural development. In addition, the program covers animal agriculture including nutrition, genetics and physiology, management, and health. Introductory courses in these subjects are offered to agriculture students within the framework of a core curriculum. Specialized and advanced courses are also offered as electives to undergraduates.

The Agribusiness (AGBU) program combines the study of management with agricultural sciences in order to provide students with an understanding of the economic and business principles that underlie management tools and their application to agricultural and related businesses. The educational objectives of the AGBU program are to prepare students to become entrepreneurs, business leaders, skilled farm operators and future policy advisers who are well-grounded in the fields of agriculture and food production and who are capable of communicating and using their skills in order to improve their livelihood and that of their community.

Undergraduate courses are offered in the areas of agriculture, business management and accounting, marketing, agricultural economics, entrepreneurship and rural development. Specialized and advanced courses are also offered as electives to undergraduates.

Course Descriptions

Core Courses for the BS Degree in Agriculture

AGSC 205 The Food Odyssey 3.0; 3 cr.
The course will take the students through the journey of food systems evolution from pre-historic times to the present day and a glimpse into the future. Students who receive credit for AGSC 205 cannot receive credit for AGSC 105. Fall and Spring.

AGSC 206 Agriculture and the Environment 3.0; 3 cr.
This course will introduce students to the subject of the impact of agricultural processes on the environment. It will discuss nutrient cycling and the various agricultural activities that lead to losses of nutrients and agricultural pollutants to the environment. The course will cover agricultural activities that contribute to climate change, buffer zones between agriculture and its environment, and mitigation strategies.

AGSC 207 Land and Water Resources 2.3; 3 cr.
Global soil and water resources and their current rates of degradation. The main processes of degradation (erosion, loss of organic matter, salinization, pollution) and their causes; consequences of degradation and conservation of resources through improved land use practices. Causes, influences and mitigation measures; water use and supply management for sustainable agriculture.

AGSC 212 Microeconomic Theory of Food and Farming 3.0; 3 cr.
The course introduces economic principles which are then used to explain the production of goods and services, household behavior, economic equilibrium and the welfare consequences of alternative exchange mechanisms. Special applications will be given to decision-making and the allocation of resources for the agricultural firm, consumer behavior and demand for agricultural and food products. Students cannot receive credit for both AGSC 212 and ECON 211; the two courses will be treated as equivalent. Fall and Spring.

AGSC 220 Principles of Plant Physiology 2.3; 3 cr.
The course is an introduction to environmental and physiological factors affecting crop growth and development. Prerequisite: BIOL 200. Students cannot receive credit for both AGSC 220 and BIOL 270; the two courses will be treated as equivalent.

AGSC 222 Farm Practices 0.6; 1 cr.
The course exposes students to practical experience in operational activities and management decisions essential in modern agriculture. Prerequisites: AGSC III standing and eligibility for enrollment in the regular program at AREC.

AGSC 223 Agricultural Project and Entrepreneurship 0.6; 2 cr.
The course exposes students to practical experience in operational activities and management decisions essential in modern agriculture. Prerequisites: AGSC III standing and eligibility for enrollment in the regular program at AREC.

AGSC 225 Rural Community Development 3.0; 3 cr.
Students will gain an introduction to the concepts and models of community development. They will be able to identify the consequences of development strategies for social, economic and environmental well-being, focusing on the interrelationships of these aspects of development. Students will be introduced to strategies to identify capacity and resources available in communities and those that need to be enhanced.

AGSC 230 Crop Systems 3.0; 3 cr.
This course aims to provide students with an understanding of the scientific basis of crop production. These include broad-area agronomy cropping and horticulture. In this course students will gain an understanding of the basic physiological controls on crop yield.

AGSC 233 Plant Health I 2.3 ; 3 cr.
Students will be introduced to major plant pests covering viruses, bacteria, fungi, phytoplasma, nematodes, weeds and insects and their management.

AGSC 245 Plant Health II 2.3 ; 3 cr.
Students will be introduced to major plant pests covering viruses, bacteria, fungi, phytoplasma, nematodes, weeds and insects and their management.

AGSC 234 Chemicals in Agriculture 3.0; 3 cr.
In this course you will review some of the old pesticides that were prohibited and focus on novel pesticides which are more environmentally friendly. The development of pesticides, their chemical composition, toxicity, formulation, mode of action, agricultural and urban uses, safe handling, international laws, metabolism and fate in the environment will be covered. While this course will focus on pesticides used in agriculture it will also cover major pesticides used in public health.

AGSC 235 Agricultural Extension in Development 2.0; 2 cr.
The course involves a comparative study of developmental philosophy, objectives, and adaptation to developing countries; it examines principles and methods of extension and adult teaching. Prerequisite: AGSC 225.

AGSC 244 Agricultural Water Technologies 2.3; 3 cr.
This course deals with the practice of irrigation as a green technology with promising effects. Emphasis is given on smart irrigation systems from soil moisture measurement and monitoring to controllers and automated irrigation techniques based on weather sensing. Methods to calculate water requirements and determining application rates and irrigation schedules will be taught. Innovations in drip, sprinkler, and surface irrigation practices will be stressed.

AGSC 246 Intensive Agriculture 2.3; 3 cr.
This course introduces the students to the bases of intensive plant and animal production in terms of resource use, mechanization, technology, management, and environmental impact.

AGSC 247 Farm Power and Alternative Energy 2.3; 3 cr.
The course focuses on the study of internal combustion engines, power trains, and safe operation of tractors. The course explores the relationships between renewable energy and agriculture with an emphasis on biofuels, wind energy and hydropower.

AGSC 249 GIS for Agriculture 2.3; 3 cr.
Basic introduction to geographical information systems with emphasis on applications to agriculture; GIS data types, editing GIS data, spatial data analysis, and GPS collection; basic concepts and techniques of map analysis and the way these are used in geographical information systems in general and desktop GIS in particular. The major areas of practical application of GIS in agriculture; data and principles of sampling and modeling; computer skills for GIS software.

AGSC/AVSC 250 Organic Farming 2.3; 3 cr.
The course explores advances in organic farming and growing systems with an emphasis on farm planning, certification, marketing, information, and organic farming practices.

AGSC 252 Conservation Agriculture 3.0; 3cr.
This course will introduce students to the concept of conservation agriculture, which is a management system that integrates the use of soil, water, and biological resources. It will discuss soil properties, crop rotations, crop diversification, nutrient cycling, soil management, cover cropping, and soil inputs. The course will cover the benefits and challenges of conservation agriculture. The concept and link of soil health and sustainability with conservation agriculture will be discussed. Prerequisite: AGSC 207.

AGSC 257 Emerging Issues in Agriculture: Networking with the Private Sector 0.6; 1cr
The course is student centered. It relies on developing and delivering 4 main written /oral scientific communication items: report outline, abstract, report and an oral presentation. The students select a topic of their choice to work on throughout the semester under the supervision of a chosen adviser and the course instructor.

AGSC 265 Soil Fertility 2.3; 3 cr.
The course focuses on the study of behavior of native and applied fertilizer elements in soils in relation to crop production, soil fertility evaluation, fertilizer manufacture, fertilizer application in irrigation systems and economics of fertilizer use. Prerequisite: AGSC 207.

AGSC 298 Capstone Course: From Seed to Table 2.3; 3 cr.
This course offers students an opportunity to demonstrate integrated knowledge of the courses that were provided by the curriculum of the chosen major.

AGBU 213 Legal and Policy Aspects of the Agriculture Sector 3.0; 3cr.
The main objective of the course is to help Agribusiness students understand the Lebanese and American legal aspects of common agricultural business activities, as well as the formation and function of agri-commercial companies and related ethical principles. Prerequisite: Junior standing.

AGBU 240 Career Planning Workshop for Agribusiness 0 cr.
The course is a ten-hour workshop designed to build awareness of changing career patterns and major personal and professional influences that impact future careers. Issues such as preparation for joining the labor market, basic career guidance, understanding career stages, and practicing self-assessment are emphasized. Prerequisite: Junior standing.

AGBU 256 Summer Internship 0.6; 1 cr.
Summer Internship.

AVSC 223 Livestock Systems 2.3; 3 cr.
In this course the students will be presented with the different animal systems. The major characteristics of each will be defined in relation to environmental impact and adaptation to different climates, animal welfare, economics and productivity.

AVSC 224 Agricultural Microbiology 2.3; 3 cr.
The course covers basic and applied microbiology. The basic microbiology includes bacteriology, virology, parasitology and immunology, and the applied microbiology includes veterinary, soil, water and food microbiology.

AVSC/AGSC 243 Genetics and Biotechnology 3.0; 3 cr.
This course is an introduction to the fundamental principles of genetics, molecular biology and biotechnology. Following description of cell multiplication and trait inheritance and segregation according to Mendelian genetics, the course will focus on DNA and gene regulation, transcription, translation, gene expression, mutation and DNA recombination with a brief description of current molecular techniques. The important applications of biotechnology in the field of agriculture will be discussed including transgenic organisms, marker assisted selection, and transformed microorganisms for genetic improvement. Students cannot receive credit for both AVSC 243 and BIOL 223; the two courses will be treated as equivalent.

AVSC 271 Animal Nutrition 3.0; 3 cr.
Structure and functioning of digestive systems of livestock and poultry; bioenergetics, nutritional deficiencies, and nutrient requirements of farm animals.

AVSC 275 Anatomy and Physiology of Farm Animals 3.0; 3 cr.
The course explores the systematic anatomy and physiology of farm animals.

Concentration Courses

Sustainable Agriculture (Organic/Conservation)

AGSC 241 Farm Management 3.0; 3 cr.
The course focuses on the application of modern principles and techniques of management to the farm sector. Prerequisite: AGSC 212 or ECON 203.

AGSC 251 Vegetable Production 3.0; 3 cr.
The course introduces students in the Agriculture program to scientific and hands-on, practical knowledge of vegetable production. Students will also gain an understanding of the physiological controls on vegetable crop yield under protective and local environments. They will become familiar with the current sources of information available to produce and develop production management skills through the production of vegetables. Practical sessions will guide students in understanding different vegetable crop production techniques used in Lebanon and worldwide.

AGSC 253 Harvest and Post-Harvest Issues and Strategies 3.0; 3 cr.
This course discusses the structure of the agricultural harvesting and marketing system with emphasis on factors determining farm level prices. It also emphasizes how markets coordinate consumer desires and producer costs through marketing channels, the impact of market structure, grades, information, product form and advertising on farm prices, and the international trade impact on producers, consumers, agribusinesses, and the government. Prerequisites: AGSC 203 and AGSC 212.

AGSC 270 Principles of Integrated Farming 3.0; 3 cr.
Introduces the students to modern sustainable farming systems including permaculture landscaping, agroforestry, aquaculture in combination with animal and plant farming, nutrient cycles, crop residue and manure management, grazing systems and multi species interactions, the environmental and economic impact of these systems and their management will be addressed.

AGSC 272 Natural Control of Plant Pests 3.0; 3 cr.
The principles and practices of using natural enemies and antagonists within integrated pest management strategies to manage plant pests (insects, mites, pathogens, and weeds) to reduce crop losses. Pest management of major vegetables, fruit tree crops and cereals will be covered. Prerequisites: AGSC 233 and AGSC 245 or consent of instructor.

AGSC 273 The Energy-Water-Food Nexus 3.0; 3 cr.
Energy, water and food are linked, where water is the major component of crop production and energy is needed for water supply through pumps and for food distribution. This course aims at exploring the link and explaining the connection between these three components.

AGSC 274 Agricultural Biotechnology 2.3; 3 cr.
This course aims at teaching students the modern technology advancements in the field of agriculture from plant and animal biotechnology, to breeding and genetics.

AVSC 242 Small Ruminant Production in Arid Regions 3.0; 3 cr.
The course explores breeding, feeding and management of sheep and goats under arid conditions.

Agricultural Technology

AGSC 274 Agricultural Biotechnology 3.0; 3 cr.
This course aims at teaching students the modern technology advancements in the field of agriculture from plant and animal biotechnology, to breeding and genetics.

AGSC 283 Precision Farming and Agricultural Technology 3.0; 3 cr.
The course covers essential aspects of precision agriculture concepts including soil/

landscape and crop spatial variability; new technologies; GIS, DEM, GPS, sensors, special software, remote sensing; geostatistics, sampling, experimental designs; precision integrated crop management; variable rate technologies; data acquisition, processing, and management.

Elective Courses

AGSC 105 History of Food and Food Systems 3.0; 3 cr.
The course will take the students through the journey of food systems evolution from pre-historic times to the present day and a glimpse into the future. Students who receive credit for AGSC 105 cannot receive credit for AGSC 205. Elective. Fall and Spring.

AGSC 201 Orientation to Agriculture and Food Systems 2.0; 2 cr.
This course provides students with basic introductory knowledge of the various disciplines and related subjects in the Faculty of Agricultural and Food Sciences. It covers the various aspects of agricultural production and development including natural resources, plant sciences, plant health management, animal production and management, agribusiness, nutrition and food sciences, and landscape design and eco-management.

AGSC 219 Apiculture 2.3; 3 cr.
The course introduces the basics of the honeybee world by exploring the natural history of apiculture, honeybee biogeography and evolution, biology, social structure, natural enemies, hive products and pollination dynamics. It illustrates the ecological aspects of one of nature's most fascinating creatures under the looming environmental degradation and focuses on hands-on beekeeping activities.

AGSC 278 Floriculture 2.3; 3 cr.
This course will explore the different basic cultural and production requirements in the field of floriculture in theory and practice. Also, production methods for different species in the special categories of production, such as flower potted plants and interior plants, cut flowers and bedding plants. A general outlook on soil media, environmental influence and techniques in propagation, and controlling plant development, will be discussed besides structures and greenhouse management.

AGSC 286 The Fruitful Branches: Grapevine and Olive 3.0; 3 cr.
This course explores facts on grape and olive production and distribution around the world and particularly in Lebanon in addition to the art and science of planting, growing and training these rich crops. The course is a broad-based course covering aspects from history to modern trends, from production to processing, from vine to wine and from olive to olive oil.

AGSC 293 Integrated Plant Health Management for Economic Crops 3.0; 3 cr.
The course focuses on basic concepts of the integrated approach to the proper management of plant diseases and insect pests of economic crops including components of Plant Health Management (PHM) programs and the feasibility and economics of various management strategies; specific PHM cases on major crops are discussed. Prerequisite: Consent of Instructor.

AGSC 294 Applied Plant Protection 2.3; 3 cr.
The course explores observations and study of major insect pests and plant diseases on field and greenhouse crops with emphasis on recognition, identification and management. Prerequisite: Consent of Instructor.

AGSC 299 Special Topics in Agricultural Science 2 cr.
The course is a directed study. Tutorial. Prerequisites: Fourth year standing and consent of instructor.

AVSC 230 Animal Health and Diseases 3.0; 3 cr.
The course introduces students of varying backgrounds to principles of Animal Biological and Health Sciences. It presents different selected commensal and pathogenic organisms causing common symptomatic and asymptomatic diseases; signs of health and disease specific to different domestic, marine mammal, fish and wildlife animal species; epidemiology of disease incidence; immunology, immune competence vs. tolerance, and vaccination principles; emerging animal diseases; monitoring disease incidence using surveillance techniques; vector biology; methods used to prevent disease occurrence including principles of management, environmental modification and nutritional support. Free elective.

AVSC 241 Principles of Dairying 2.3; 3 cr.
The course explores management, housing, feeding, breeding and record-keeping in dairy production.

AVSC 260 Introduction to Laboratory Animal Science and Management 2.3; 3 cr.
This is an introductory course covering the essentials of laboratory animal species biology, behavior, physiology and genetics; health and diseases; experimental models; facility and staff management within laboratory animal facilities; and regulatory compliance requirements in the US and European countries. Students should have previously taken any combination of two courses in the natural and health sciences and in management to gain prerequisite knowledge. Free elective.

AVSC 276 Animal Physiology Laboratory 0.3; 1 cr.
Pre- or corequisite: AVSC 275.

AVSC 277 Animal Breeding 2.0; 2 cr.
The course focuses on the principles of permanent improvement of animal and poultry production. Prerequisite: AVSC 243 or BIOL 223.

AVSC 278 Feeds and Feeding 2.3; 3 cr.
The course focuses on the study of characteristics, conservation and preparation of feeds; feeding of various classes of livestock.

AVSC 279 Companion Pet Birds and Animals 3.0; 3 cr.
The course explores breed and stock selection, equipment, stocking densities, routine management, rearing, feeding, behavior and interaction with humans, optimum production, and health care of pet birds and pet animals. Free elective.

AVSC 280 Aquarium, Marine and Farming Fish 3.0; 3 cr.
A course that covers the different fishing techniques, fish farming, characteristics of fish, comparison of classes of fish, the setup of fresh water and marine aquariums and the common diseases of fish. Free elective.

AVSC 281 Production of Novel Avian Species 3.0; 3 cr.
The course explores management practices in the production of economically beneficial avian species other than the domestic chicken (e.g., ratites, turkey, water fowl and others). Free elective.

AVSC 282 Pet Birds and Animals 3.0; 3 cr.
It is a course that describes the anatomy and physiology of pets belonging to Mammalia, Reptilia, Aves and Osteichthyes. The history, classification, breeds, selection, rearing, feeding, production and health of sixteen pets will be studied. Prerequisite: BIOL 200.

AVSC 299A Special Topics in Animal Sciences for Agriculture program 2 cr.
The course is a directed study. Tutorial. Prerequisites: Fourth year standing and consent of instructor.

Core Courses for BS in Agribusiness

AGBU 210 Marketing in Agribusiness 3.0; 3 cr.
The course is an overview of marketing activities in agro-food industries, including marketing inputs in strategic planning, global marketing, marketing research, analysis of buyer behavior, market segmentation and positioning, and development of the marketing mix elements. Students cannot receive credit for both AGBU 210 and MKTG 210; the two courses will be treated as equivalent. Prerequisite: Junior standing.

AGBU 211 Introduction to Agricultural Issues and Policies 3.0; 3 cr.
The course is a survey of global food and agricultural issues. It covers the role of agriculture in economic development, trade in food and agricultural products, global food production, consumption and marketing patterns, economics of technical change and food assistance, and agriculture and the environment.

AGBU 213 Legal and Policy Aspects of the Agriculture Sector 3.0; 3cr.
The main objective of the course is to help Agribusiness students understand the Lebanese and American legal aspects of common agricultural business activities, as well as the formation and function of agri-commercial companies and related ethical principles. Prerequisite: Junior standing.

AGBU 229 Entrepreneurship in Agriculture 3.0; 3 cr.
The course focuses on the study of integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment concepts in management of agricultural businesses using the compilation by students of agribusiness plans. Prerequisite: Junior standing.

AGBU 236 New Trends in Agricultural and Food Systems 3.0; 3 cr.
The course explores current trends in agricultural production and trade, developments in private sector markets and in public policy, and the concerns related to the effects of agricultural production and trade on the environment, food security and regional development. The course will also address the issue of the challenges to food exporters from developing countries posed by the need to comply with ever-strict standards. Moreover, the course will cover the global market structures of the agricultural products most relevant to the Mediterranean countries and the experience and present thinking about the pros and cons of the spread of genetically modified products, designation of origins, and other food labeling mechanisms. Prerequisite: Senior status in Agribusiness.

AGBU 239 Agribusiness Communication Skills Workshop 0 cr.
The course is a ten-hour workshop designed to introduce students to the various

communication skills needed in a typical work environment. Mastering these skills plays a profound role in shaping and advancing professional careers in all types of industries and work scopes. The workshop introduces specific guidelines for the effective use of a variety of communication skills in the workplace in an interactive manner by simulating the work environment.

AGBU 240 Career Planning Workshop for Agribusiness 0 cr.
The course is a ten-hour workshop designed to build awareness of changing career patterns and major personal and professional influences that impact future careers. Issues such as preparation for joining the labor market, basic career guidance, understanding career stages, and practicing self-assessment are emphasized. Prerequisite: Junior standing.

AGBU 248 Operation Management for Agribusiness 3.0; 3 cr.
This course covers the essentials of supply chain management and quantitative techniques needed for the planning and implementation of agribusiness operations. This course includes optimization of production and cost minimization. Students cannot receive credit for both AGBU 248 and DCSN 200; the two courses will be treated as equivalent. Prerequisite: Senior standing.

AGBU 255 Field Study of the Rural Agro-Economy 3.0; 3 cr.
Tours of agribusiness enterprises and rural farms in Lebanon are organized with the intent of observing the management and marketing practices used in successful operations of different agribusiness structures. Students will also learn how the agriculture value chain is structured within the rural economy. Prerequisites: AGSC 203 and AGSC 207.

AGBU 256 Summer Internship 0.6; 1 cr.
Summer Internship.

AGBU 292 Agribusiness Final Year Project 5.0; 5 cr.
This is a milestone capstone course for students in Agribusiness that emphasizes the application of concepts, tools and principles including management, finance, marketing, economic theory and quantitative methods to applied agricultural decisions on selected agricultural and agribusiness projects. Through the course, students develop team-building as well as written and oral communication skills. Prerequisite: Senior standing.

AGSC 203 Crop Production and Protection 2.3; 3 cr.
The course provides an overview of the technologies used in the production of crops. The student will acquire a knowledge and understanding of current crop production systems, the end market requirements for products as well as the quality standards of these products. Students will also learn current techniques in crop protection and yield management.

AGSC 204 Natural Sciences for Agribusiness 3.0; 3 cr.
This course is an introduction to chemistry and biology designed for first-year Agribusiness students. It aims to familiarize students with the basic concepts and theoretical principles of modern chemistry and biology. Students will gain an appreciation of the importance that biology and chemistry play in our natural lives.

AGSC 207 Land and Water Resources 2.3; 3 cr.
Global soil and water resources and their current rates of degradation. The main

processes of degradation (erosion, loss of organic matter, salinization, pollution) and their causes; consequences of degradation and conservation of resources through improved land use practices. Causes, influences and mitigation measures; water use and supply management for sustainable agriculture.

AGSC 212 Microeconomic Theory of Food and Farming 3.0; 3 cr.
The course introduces economic principles which are used to explain the production of goods and services, household behavior, economic equilibrium and the welfare consequences of alternative exchange mechanisms. Special applications will be given to decision-making and the allocation of resources for the agricultural firm, consumer behavior and demand for agricultural and food products.

AGSC 253 Harvest and Post-Harvest Issues and Strategies 3.0; 3 cr.
This course discusses the structure of the agricultural harvesting and marketing system with emphasis on factors determining farm level prices. It also emphasizes how markets coordinate consumer desires and producer costs through marketing channels, the impact of market structure, grades, information, product form and advertising on farm prices, and the international trade impact on producers, consumers, agribusinesses and the government. Prerequisites: AGSC 203, AGSC 207 and AGSC 212.

AVSC 220 Livestock Production 3.0; 3 cr.
The course is divided into three main sections. The first section introduces the types and breeds of livestock, terminology, methods, management systems, techniques of animal production and consumer impact. The second section introduces students to the modern management practices required for the production of economically beneficial avian species including domestic chickens, turkeys, waterfowls, game birds and others. The third section discusses the nature of economic diseases in domestic animals and avian species and the regulations of the World Trade Organization in the import and export of animals, including rules that prevent the trans-boundary transmission of microbes causing economic diseases.

Department of Nutrition and Food Sciences (NFSC) Undergraduate Program

Chairperson:	Obeid, Omar
Professors:	Abiad, Mohammad; Hwalla, Nahla; Kharroubi, Samer (Associate Dean of Student Affairs); Nasreddine, Lara; Obeid, Omar; Olabi, Ammar; Toufeili, Imad
Adjunct Professor:	Naja, Farah
Adjunct Associate Professor:	Jomaa, Lamis
Assistant Professors:	Fares, Elie Jacques; Iskandar, Christelle
Assistant Professor of Practice:	Chamieh, Marie Claire
Visiting Assistant Professor:	Ouaijan, Krystel
Assistant Research Professor:	Dr. Carla Habib Mourad
Instructors:	Daroub, Hamza; Hamzeh, Reem; Hjeij, Laura

Undergraduate Program

The mission of the Department of Nutrition and Food Sciences is to produce qualified graduates capable of serving the region in various areas of food science, nutrition and dietetics. The department participates in offering courses within the Faculty of Agricultural and Food Sciences (FAFS) undergraduate core program and additionally offers junior and senior courses that cover areas of major importance in food science, nutrition and dietetics. The department offers two three-year programs, one leading to a BS degree in Nutrition and Dietetics (NTDT) and the other leading to a BS degree in Food Science and Management. Graduates wishing to qualify as licensed dietitians should complete an internship for a minimum of six months in a recognized medical setting.

Moreover, the department offers a four-year Nutrition and Dietetics Program (NDCP), which combines didactic and supervised practice components. The program is U.S. accredited under the International Dietitian Education program standards. It has also been granted candidacy for accreditation status by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics, (120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-0040 ext. 5400. http://www.eatright.org/ACEND).

Students who intend ultimately to enter the Faculty of Medicine must complete the premedical requirements as outlined in the AUB catalogue, Faculty of Arts and Sciences section titled Premedical Study. Graduates of these programs do not receive the Diploma of Ingénieur Agricole. The following courses are offered by the department:

Core Courses for the BS Degree in Nutrition and Dietetics

NFSC 210 Statistics in Nutrition and Food Sciences 2.3; 3 cr.
An introduction to the study of statistics as it applies to nutrition and food sciences. Topics include both descriptive and inferential statistics: samples, population and types of data; organizing and graphing data; numerical descriptive measures; probability; discrete random variables and their probability distributions; continuous random variables and the normal distribution; point and interval estimation and hypothesis testing; correlation and simple linear regression; Chi-Square tests. Students will learn to use the computer package SPSS for statistical analysis. Students cannot receive credit for NFSC 210, STAT 201, STAT 210, STAT 230, ECON 213 or EDUC 227. Fall and Spring.

NFSC 221 Basic Nutrition 3.0; 3 cr.
The course is a survey of nutrients, including their food sources, digestion, metabolism, functions and requirements in humans. Fall and Spring.

NFSC 222 Community Nutrition 3.0; 3 cr.
The course is an introduction to key concepts and current topics in community nutrition. The course discusses the role of nutrition in improving the health and well-being of communities and familiarizes students with population nutritional status assessment, principles of nutrition research, and factors involved in planning, implementing and evaluating community nutrition programs and policies. Prerequisites: NFSC 221 and NFSC 285. Fall.

NFSC 229 Menu Planning 0.3; 1 cr.
The course explores the principles and techniques of menu planning for healthy people. Topics include nutrient needs for optimum health, dietary guidelines, food groups, food portion sizes and the use of exchange lists for meal planning and client nutrition education in both the English and Arabic languages. Prerequisites: NFSC 221 and NFSC 240. Spring.

NFSC 240 Nutritional Status Assessment 1.3; 2 cr.
The course exposes students to the theoretical basis of various aspects of nutritional assessment (counseling dietary assessment, anthropometric measurement, biochemical assays and clinical assessment). The course also familiarizes students with nutritional status assessment tools and techniques through practical experimentation in the lab. Prerequisites: NFSC 221 and NFSC 274. Fall.

NFSC 261 Introductory Biochemistry 3.0; 3 cr.
The course focuses on the study of the chemistry of biological compounds, their enzymatic degradation and intermediary metabolism. Prerequisite: CHEM 208. Fall and Spring.

NFSC 265 Food Chemistry 3.0; 3 cr.
The course focuses on the study of the chemical composition and physical and sensory properties of foods. Prerequisite: CHEM 208. Fall and Spring.

NFSC 267 Food Analysis 1.3; 2 cr.
The course explores laboratory methods for chemical analysis of nutrients and chemicals in food products. Prerequisites: CHEM 205 and CHEM 209; pre- or corequisite: NFSC 265. Fall and Spring.

NFSC 274 Human Nutrition and Metabolism 3.0; 3 cr.
The course explores human physiological needs for energy, carbohydrates, fats, proteins, vitamins and minerals, control of nutrient metabolism. Prerequisites: NFSC 221, NFSC 261 and PHYL 246. Fall.

NFSC 277 Food Microbiology I 3.0; 3 cr.
The course is a survey of microorganisms and their role in causing food spoilage and food poisoning, and the control of microbial spoilage and pathogenic microorganisms in foods. Fall and Spring.

NFSC 281 Nutrition in the Life Cycle Lab for NTDT 0.3; 1 cr.
The course emphasizes practical applications of the principles of nutrition and human development in the context of normal physiological changes that occur throughout the life cycle. It includes evidence-based recommendations and interventions to improve nutrition status and food-related behaviors through the life cycle for individuals, groups and populations. Prerequisites: NFSC 221 and NFSC 229. Corequisites: NFSC 274 and NFSC 285. Spring.

NFSC 285 Nutrition in the Life Cycle 2.0; 2 cr.
The course focuses on the basic nutritional needs of individuals throughout their life cycle: infancy, childhood, adolescence, adulthood and old age, and special nutritional requirements for pregnancy and lactation. Prerequisites: NFSC 221. Corequisite: NFSC 274. Spring.

NFSC 287 Food Processing 2.0; 2 cr.
The course focuses on the principle of food spoilage, food preservation and the different methods of food processing. Prerequisites: NFSC 265, and NTDT III or FSMT IIII. Fall and Spring.

NFSC 289 Food Processing Laboratory 0.3; 1 cr.
The course involves students in laboratory exercises in the pilot plant in food preservation, preparation and processing. Corequisites: NFSC 287 and NTDT III or FSMT III. Fall and Spring.

NFSC 290 Food Service Management 2.3; 3 cr.
The course explores techniques of management of functional operation of food service; field trips, self-study modules, reports, and discussion. Prerequisite: NFSC 221; pre- or corequisite: MNGT 215. Fall and Spring.

NFSC 292 Medical Nutrition Therapy I 3.0; 3 cr.
The course examines selected metabolic diseases, HIV, and cancer by covering their etiology, metabolic pathways and the importance of medical nutrition therapy. Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Fall.

NFSC 293 Medical Nutrition Therapy II 3.0; 3 cr.
The course is a thorough review of the nutrition care process in the treatment of diet-related diseases. It prepares students to implement the nutrition care process for various conditions, including but not limited to overweight and obesity, diabetes, cardiovascular, gastrointestinal and renal diseases; helps students understand the pathophysiology of selected diseases in which nutritional intervention plays a major role, identify the nutritional needs of patients with disease and develop an appropriate patient nutrition care plan. Prerequisites: NFSC 274, NFSC 240 and NSFC 285. Spring.

NFSC 294 Medical Nutrition Therapy Laboratory I for NTDT 0.3; 1 cr.
It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy for diseases and disorders discussed in NFSC 292. This is done through the use of self-study modules, case studies, reports and discussions. Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisite: NFSC 292. Fall.

NFSC 295 Medical Nutrition Therapy Laboratory II for NTDT 0.3; 1 cr.
It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy for diseases and disorders discussed in NFSC 293. This is done through the use of self-study modules, case studies, reports and discussions. Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisite: NFSC 293. Spring.

NFSC 296 Current Topics in Food Sciences and Nutrition 1 cr.
Seminar presentation on current topics in food sciences and nutrition. Prerequisite: NTDT III. Fall and Spring.

NFSC 299A Projects in Nutrition and Food Sciences 0 cr.
The course is a directed study. It is a tutorial in current topics in nutrition and food sciences that is designed to introduce the students to the skills necessary to execute research projects in their academic discipline. Prerequisites: NTDT or FSMT III. Fall.

NFSC 299B Projects in Nutrition and Food Sciences 2 cr.
The course is a directed study. It is a tutorial in current topics in nutrition and food sciences that complements NFSC 299A. It is designed to help guide the students execute a project in their academic discipline. Prerequisites: NFSC 210, NFSC 299A, CITI. Fall and Spring.

NFSC 298 Dietetic Internship 2 cr.
Supervised training of at least 6 months in all areas of dietetic practice, clinical, food service and community at an affiliated medical facility. Offered in Spring for Fall graduates and in Summer for Spring Graduates and renewable until completion of internship duration.

Core Courses for the BS Degree in Nutrition and Dietetic Coordinated Program (NDCP)

NFSC 210 Statistics in Nutrition and Food Sciences 2.3; 3 cr.
An introduction to the study of statistics as it applies to nutrition and food sciences. Topics include both descriptive and inferential statistics: samples, population and types of data; organizing and graphing data; numerical descriptive measures; probability; discrete random variables and their probability distributions; continuous random variables and the normal distribution; point and interval estimation and hypothesis testing; correlation and simple linear regression; Chi-Square tests. Students will learn to use the computer package SPSS for statistical analysis. Students cannot receive credit for NFSC 210, STAT 201, NFSC 210 or STAT 210. Fall and Spring.

NFSC 221 Basic Nutrition 3.0; 3 cr.
The course is a nutritional survey of nutrients, including their food sources, digestion, metabolism, functions and requirements in humans. Fall and Spring.

NFSC 222 Community Nutrition 3.0; 3 cr.
The course is an introduction to key concepts and current topics in community nutrition. This course discusses the role of nutrition in improving the health and well-being of communities and familiarizes students with population nutritional status assessment, principles of nutrition research and factors involved in planning, implementing and evaluating community nutrition programs and policies. Prerequisites: NFSC 221 and NFSC 285. Fall.

NFSC 224 Advanced Nutrition Principles and Practices 0.3; 1 cr.
The course explores principles essential for being a successful Registered Dietitian (RD), including code of ethics, scope of dietetics practice, medical coding, and process of nutrition legislation within the United States. Through the use of real-life clinical case study scenarios and role playing, students will use the Nutrition Care Process (NCP) in developing their nutrition care plans, and practice counseling techniques to improve their effectiveness in providing nutrition education and working with an interdisciplinary team. Prerequisite: NDCP III. Spring.

NFSC 225 (A, B) Job Shadowing 0 cr.
Students will shadow dietitians at different types of facilities covering MNT, Community Nutrition and Foodservice Management. Prerequisites: NDCP. NFSC 225A is offered in the Fall, and NFSC 225B is offered in the Summer.

NFSC 229 Menu Planning 0.3; 1 cr.
The course explores the principles and techniques of menu planning for healthy people. Topics include nutrient needs for optimum health, dietary guidelines, food groups, food portion sizes and the use of exchange lists for meal planning and client nutrition education in both the English and Arabic languages. Prerequisites: NFSC 221 and NFSC 240. Spring.

NFSC 240 Nutritional Status Assessment 1.3; 2 cr.
The course exposes students to the theoretical basis of various aspects of nutritional assessment (counseling dietary assessment, anthropometric measurement, biochemical assays and clinical assessment). The course also familiarizes students with nutritional status assessment tools and techniques through practical experimentation in the lab. Prerequisite: NFSC 221. Fall.

NFSC 261 Introductory Biochemistry 3.0; 3 cr.
The course focuses on the study of the chemistry of biological compounds, their enzymatic degradation and intermediary metabolism. Prerequisite: CHEM 208. Fall and Spring.

NFSC 265 Food Chemistry 3.0; 3 cr.
The course focuses on the study of the chemical composition and physical and sensory properties of foods. Prerequisite: CHEM 208. Fall and Spring.

NFSC 267 Food Analysis 1.3; 2 cr.
The course exposes students to laboratory methods for chemical analysis of nutrients and chemicals in food products. Prerequisites: CHEM 205 and CHEM 209; pre- or corequisite: NFSC 265. Fall and Spring.

NFSC 274 Human Nutrition and Metabolism 3.0; 3 cr.
The course focuses on human physiological needs for energy, carbohydrates, fats, proteins, vitamins and minerals; control of nutrient metabolism. Prerequisites: NFSC 221, NFSC 261 and PHYL 246. Fall and Spring.

NFSC 275 Quantity Food Production 1.3; 2 cr.
It is a course whereby principles and methods of buying, preparing and serving foods for various types of quantity food facilities are considered. Standardization of recipes, cost control, safety and sanitation are practiced. Students demonstrate proficiency with food service equipment and utensils, participate in large-scale recipe preparation, and work in teams to create, plan and produce high quality meal(s) for 40-75 people. Prerequisites: NFSC 290 and NDCP III. Spring.

NFSC 277 Food Microbiology I 3.0; 3 cr.
The course is a survey of microorganisms and their role in causing food spoilage and food poisoning, and the control of microbial spoilage and pathogenic microorganisms in foods. Fall and Spring.

NFSC 279 Medical Nutrition Therapy Lab I for NDCP 0.3; 1 cr.
It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy utilizing the nutrition care process for diseases and disorders discussed in NFSC 292. This is done through the use of self-study modules, case studies, reports and discussions. Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisites: NFSC 292 and NDCP III. Fall.

NFSC 285 Nutrition in the Life Cycle 2.0; 2 cr.
The course focuses on the basic nutritional needs of individuals throughout their life cycle: infancy, childhood, adolescence, adulthood and old age, and special nutritional requirements for pregnancy and lactation. Prerequisite: NFSC 221 and NFSC 274. Spring.

NFSC 286 Nutrition in the Life Cycle Lab for NDCP 0.3; 1 cr.
The course emphasizes the practical applications of the principles of nutrition and human development in the context of normal physiologic changes that occur throughout the lifecycle. It incorporates problem-based learning through case studies and employs the nutrition care process for evidence-based implementation of interventions to improve nutrition status and food related behaviors through the life cycle. Prerequisites: NFSC 221, NFSC 229, NFSC 274, NFSC 285 and NDCP III. Spring.

NFSC 287 Food Processing 2.0; 2 cr.
The course focuses on the principle of food spoilage, food preservation and the different methods of food processing. Prerequisites: NFSC 265, and NTDT III or FSMT III. Fall and Spring.

NFSC 288 Technology of Food Products 2.3; 3 cr.
The course focuses on technology and preservation methods of food products. It also includes laboratory exercises in the pilot plant in food preservation, processing, and quality control testing. Prerequisites: FSMT III, AGRL IV, NTDT III or NDCP III.

NFSC 289 Food Processing Laboratory 0.3; 1 cr.
The course involves students in laboratory exercises in the pilot plant in food preservation, preparation, and processing. Pre- or corequisites: NFSC 287. Prerequisite: NTDT III, NDCP III or FSMT III. Fall and Spring.

NFSC 290 Food Service Management 2.3; 3 cr.
The course focuses on techniques of management of functional operation of food service, field trips, self-study modules, reports, and discussion. Prerequisite: NFSC 221; pre- or corequisite: MNGT 215. Fall and Spring.

NFSC 292 Medical Nutrition Therapy I 3.0; 3 cr.
The course examines selected metabolic diseases, HIV and cancer by covering their etiology, metabolic pathways and the importance of medical nutrition therapy. Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Fall.

NFSC 293 Medical Nutrition Therapy II 3.0; 3 cr.
The course is a thorough review of the nutrition care process in the treatment of diet-related diseases. The course prepares students to implement the nutrition care process for various conditions, including but not limited to overweight and obesity, diabetes, cardiovascular, gastrointestinal and renal diseases. It helps students: 1) understand the pathophysiology of selected diseases in which nutritional intervention plays a major role, 2) identify the nutritional needs of patients with disease and 3) develop an appropriate patient nutrition care plan. Prerequisites: NFSC 274, NFSC 240 and NSFC 285. Spring.

NFSC 296 Current Topics in Food Sciences and Nutrition 1 cr.
The course is a seminar presentation in current topics in food sciences and nutrition. Prerequisite: NTDT or NDCP III. Fall and Spring.

NFSC 297 Medical Nutrition Therapy Lab II for NDCP 0.3; 1 cr.
It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy utilizing the nutrition care process for diseases and disorders discussed in NFSC 293. This is done through the use of self-study modules, case studies, reports and discussions. Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisites: NFSC 293 and NDCP III. Spring.

NFSC 299A Projects in Nutrition and Food Sciences 0 cr.
The course is a directed study. It is a tutorial in current topics in nutrition and food sciences that is designed to introduce the students to the skills necessary to execute research projects in their academic discipline. Prerequisites: NTDT or FSMT III. Fall.

NFSC 299B Projects in Nutrition and Food Sciences 2 cr.
The course is a directed study. It is a tutorial in current topics in nutrition and food sciences that complements NFSC 299A. It is designed to help guide the students execute a project in their academic discipline. Prerequisites: NFSC 210, NFSC 299A, CITI. Fall and Spring.

NFSC 283 Nutrition Education and Communication 3 cr.
The course focuses on principles of health behavior, learning theories and their application to nutrition education and nutrition counseling practice. Equips students with the necessary communication tools and techniques to help prevent nutrition-related disease and promote health. Prerequisite: NDCP IV. Fall.

NFSC 284 (A, B) Seminar in Clinical Dietetics 1 cr.
This course focuses on developing the communication and research skills as well as on strengthening the critical thinking capacities of CP students undergoing an intensive internship program by providing them the opportunity to present and discuss all interesting nutritional issues arising during their CP practicum. It is divided into NFSC 284A and 284B. Prerequisite: NDCP IV. Fall and Spring.

NFSC 298 (W, SU, F, S) Dietetic Practicum 28 cr.
The course involves training for a minimum of 1200 hours at an affiliated medical facility. Prerequisite: NDCP IV.

Core Courses for the BS Degree in Food Science and Management (FSMT)

NFSC 210 Statistics in Nutrition and Food Sciences 2.3; 3 cr.
An introduction to the study of statistics as it applies to nutrition and food sciences. Topics include both descriptive and inferential statistics: samples, population and types of data; organizing and graphing data; numerical descriptive measures; probability; discrete random variables and their probability distributions; continuous random variables and the normal distribution; point and interval estimation and hypothesis testing; correlation and simple linear regression; Chi-Square tests. Students will learn to use the computer package SPSS for statistical analysis. Students cannot receive credit for NFSC 210, STAT 201, STAT 210, STAT 230, ECON 213 or EDUC 227. Fall and Spring.

NFSC 221 Basic Nutrition 3.0; 3 cr.
The course is a survey of nutrients, including their food sources, digestion, metabolism, functions and requirements in humans. Fall and Spring.

NFSC 261 Introductory Biochemistry 3.0; 3 cr.
The course focuses on the chemistry of biological compounds, their enzymatic degradation and intermediary metabolism. Prerequisite: CHEM 208. Fall and Spring.

NFSC 265 Food Chemistry 3.0; 3 cr.
The course focuses on the study of the chemical composition and physical and sensory properties of foods. Prerequisite: CHEM 208. Fall and Spring.

NFSC 267 Food Analysis 1.3; 2 cr.
The course exposes students to laboratory methods for chemical analysis of nutrients and chemicals in food products. Prerequisites: CHEM 205 and CHEM 209. Pre- or corequisite: NFSC 265. Fall and Spring.

NFSC 272 Introduction to Food Service and Industries 1.3; 2 cr.
The course is an introduction to food service and the food industry. This course explains the food chain system and describes the food service institutions and different food industries; it also includes visits to different institutions in the food chain. Prerequisites: Junior Status, FSMT II. Spring.

NFSC 277 Food Microbiology I 3.0; 3 cr.
It is a survey of microorganisms and their role in causing food spoilage and food poisoning, and the control of microbial spoilage and pathogenic microorganisms in foods. Fall and Spring.

NFSC 278 Food Microbiology II 2.3; 3 cr.
The course focuses on the study of the microbiological aspects of food preservation; beneficial utilization of microorganisms in food applications; detection of microbial contamination and hazards of importance to public health. Prerequisite: NFSC 277. Fall.

NFSC 280 Summer Training in Food Establishments 1 cr.
The course involves students in supervised training in one of the food service institutions or food industries. Prerequisite: NFSC 272 and NFSC 282. Summer.

NFSC 282 Food Quality Management 3.0; 3 cr.
The course covers basic principles of food quality control, quality assurance, and quality management in food service establishments and food industries; emphasis on modern concepts such as HACCP, ISO 9000 and Good Manufacturing Practice. Spring.

NFSC 287 Food Processing 2.0; 2 cr.
The course focuses on the principle of food spoilage, food preservation and the different methods of food processing. Prerequisites: NFSC 265, and NTDT III or FSMT III. Fall and Spring.

NFSC 288 Technology of Food Products 2.3; 3 cr.
The course focuses on technology and preservation methods of food products. It also includes laboratory exercises in the pilot plant in food preservation, processing, and quality control testing. Prerequisites: FSMT III, AGRL IV, NTDT III or NDCP III.

NFSC 289 Food Processing Laboratory 0.3; 1 cr.
The course involves students in laboratory exercises in the pilot plant in food preservation, preparation, and processing. Pre- or corequisites: NFSC 287. Prerequisite: NTDT III, NDCP III or FSMT III. Fall and Spring.

NFSC 291 Elements of Food Engineering 3.0; 3 cr.
Basic concepts and principles of food engineering; emphasis on food handling and unit operations utilized in food processing. Prerequisites: MATH 204 and FSMT II. Fall.

NFSC 296 Current Topics in Food Sciences and Nutrition 1 cr.
Seminar presentation on current topics in food sciences and nutrition. Prerequisite: FSMT III. Fall and Spring.

NFSC 299A Projects in Nutrition and Food Sciences 0 cr.
The course is a directed study. It is a tutorial in current topics in nutrition and food sciences that is designed to introduce the students to the skills necessary to execute research projects in their academic discipline. Prerequisites: NTDT or FSMT III. Fall.

NFSC 299B Projects in Nutrition and Food Sciences 2 cr.
The course is a directed study. It is a tutorial in current topics in nutrition and food sciences that complements NFSC 299A. It is designed to help guide the students execute a project in their academic discipline. Prerequisites: NFSC 210, NFSC 299A, CITI.

Core Course for the BS Degree in Agribusiness

NFSC 252 Introduction to Food Processing 3.0; 3 cr.
Technology and processing of foods; includes different technologies applied to preserve and process food from post-harvest stages to being ready for consumption. Processing methods covered relate to cereals, dairy products, meat, poultry, fats and oils, fermentation, fruits and vegetables, as well as beverages. Fall and Spring.

Elective Course neither for Nutrition and Dietetics nor for Food Science and Management

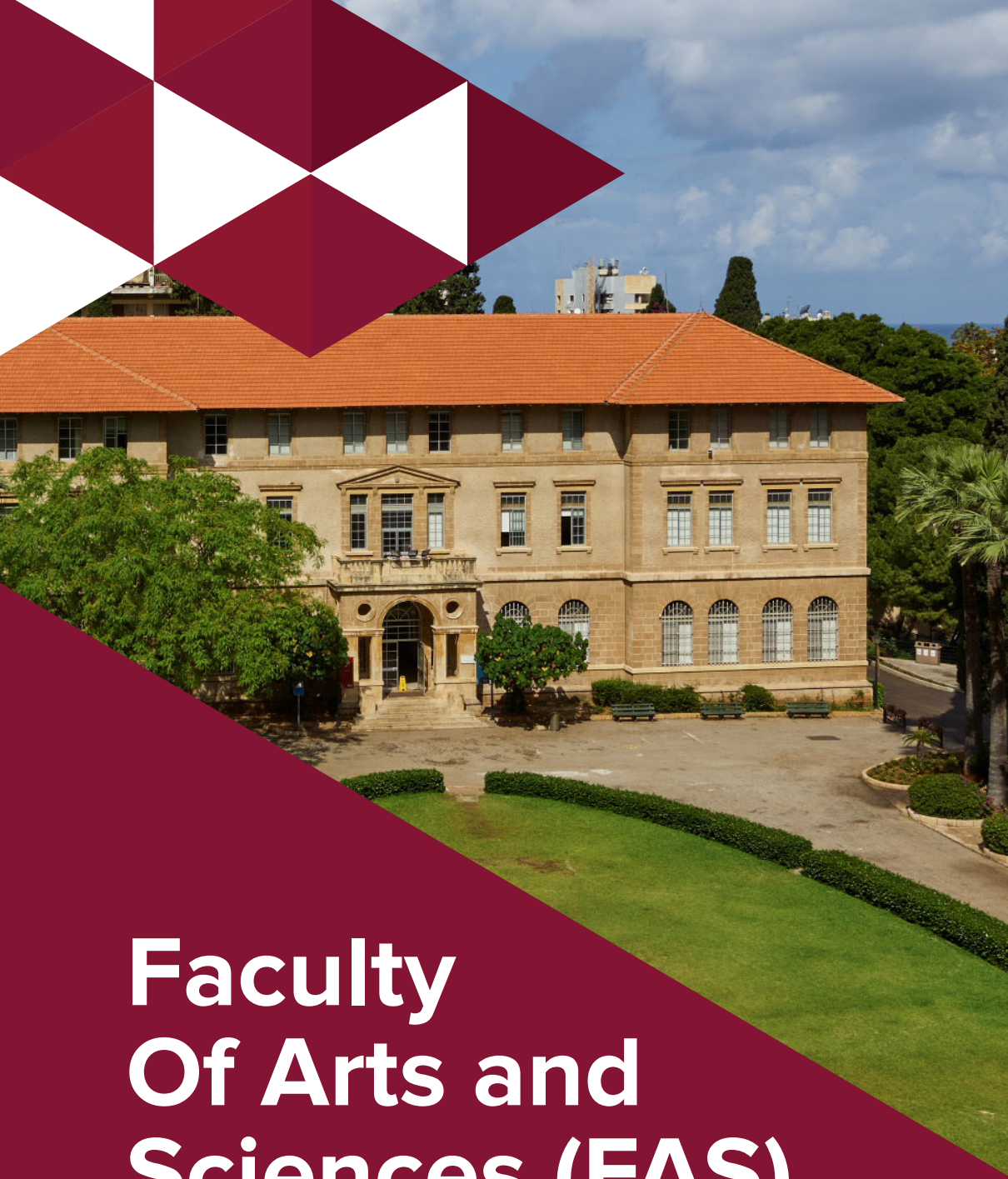
NFSC 123 Nutrition and Physical Activity 3.0; 3 cr.
Inadequate physical activity and a poor diet are considered to be leading causes of many major diseases. Exercise has potent effects on the metabolism of both macro and micronutrients. Exercise and nutrition together offer a powerful intervention for many health problems, including sarcopenia, metabolic disease and obesity. This course is designed to give students an understanding of the fundamental interactions between exercise, nutrition and health, mainly with lifestyle changes based on current international dietary and physical activity guidelines. Students who receive credit for NFSC 123 cannot receive credit for NFSC 223. Elective. Fall and Spring.

NFSC 215 Gender, Food and Nutrition 3.0; 3 cr.
Goal 5 of the United Nations' Sustainable Development Goals (SDGs) aims to "achieve gender equality and empower all women and girls" around the world. While women and girls often have increased nutritional needs during the lifecycle, social norms in many parts of the world frequently lead to gender inequalities in nutrition, which tend to disfavor females. This course discusses nutrition from a gender equality lens and sheds light on their mutually reinforcing relation: improving nutrition is crucial to achieving gender equality and, in turn, improving gender equality contributes to better nutrition. The course will discuss the changing nutritional needs throughout the lifespan, the social and cultural norms affecting food choice, and the prevalent gender disparities in food and nutrition security. The course will also highlight the need to focus on improving nutrition of girls and women as a public health strategy aimed at curbing the growing burden of chronic diseases in modern societies.

NFSC 220 Food and Nutrition Awareness 3.0; 3 cr.
The course introduces the discipline of nutrition and assists students in making optimal food choices for better health. Elective. Fall and Spring.

NFSC 223 Nutrition and Physical Activity 3.0; 3 cr.
Inadequate physical activity and a poor diet are considered to be leading causes of many major diseases. Exercise has potent effects on the metabolism of both macro and micronutrients. Exercise and nutrition together offer a powerful intervention for many health problems, including sarcopenia, metabolic disease and obesity. This course is designed to give students an understanding of the fundamental interactions between exercise, nutrition and health, mainly with lifestyle changes based on current international dietary and physical activity guidelines. Students who receive credit for NFSC 223 cannot receive credit for NFSC 123. Elective. Fall and Spring.

NFSC 252 Introduction to Food Processing 3.0; 3 cr.
Technology and processing of foods; includes the different technologies applied to preserve and process food from post-harvest stages to being ready for consumption. Processing methods covered relate to cereals, dairy products, meat, poultry, fats and oils, fermentation, fruits and vegetables, as well as beverages. Elective. Fall and Spring.



Faculty Of Arts and Sciences (FAS)

Undergraduate Program

Officers of the Faculty

Fadlo R. Khuri	President of the University
Zaher Dawy	Provost
Farès Dahdah	Dean
Saouma BouJaoude	Special Advisor to the Dean for Faculty Affairs
Pierre Karam	Associate Dean
Izzat El Hajj	Director of Freshman Program
Bradley Jon Tucker	Registrar
Antoine Sabbagh	Director of Admissions
Lokman Meho	University Librarian

Faculty Administrative Support

Bassel Baker	IT Service Desk Manager
Patrick Daou	GIS Technologist / Specialist
Yara El-Hoss	Student Services Administrative Officer
Zeina Halabieh	Director of Student Services and FAS Space Management
Razan Harb	Senior IT Service Delivery Manager
Ghida Itani	Graduate Studies and Career Services Officer
Dima Jamil Ahmad Dit Hakim	Administrative Assistant
Zeina Katergi	Executive Officer for Administrative Affairs
Dina Khattab	Academic Affairs Officer
Abeer Khoury	Financial Operations Manager
Hadi Knaiber	Data Analyst
Stephanie Mesrobian	Undergraduate Student Officer
Nadine Rizk	Faculty and Staff Affairs Manager
Razan Sabbidine	Student Records Administrative Officer
Armine Seferian	Communication Officer

Mohamad Ali Sheikh	Building Operator
Heghnar Tachouhie Yeghiayan	Faculty Affairs and Research Support Officer

Historical Background

The Faculty of Arts and Sciences was established in 1866, the same year in which the Syrian Protestant College, now the American University of Beirut, was established. On December 13, 1866, the first class was held, attended by sixteen students, and in 1870 the first five students graduated. Arabic, which was the language of instruction since the inception of the college, was replaced by English in 1882. The university in general, and the Faculty of Arts and Sciences in particular, have survived many crises since 1866, including two world wars, regional and local wars, student strikes, and economic crises. In spite of all these hardships, the faculty has continued to develop and to maintain its high academic standards.

Mission

The Faculty of Arts and Sciences embodies AUB's core commitment to the liberal arts and sciences. It offers undergraduate and graduate programs in the arts, humanities, social, natural, and mathematical sciences, and is dedicated to advanced research in all these domains. Through its freshmen and general education programs, it is the University's principal gateway to higher studies and professional education. The faculty, through its teaching and research, promotes free inquiry, critical thinking, academic integrity, and respect for diversity and equality.

Vision

Building upon its rich tradition, the Faculty of Arts and Sciences is determined to position itself at the heart of free inquiry in the Middle East. Free and critical thinking is central to the faculty's teaching, its research, its engagements with the wider community, and its commitment to the thoughtful transformation of all of its activities and structures. The faculty's enhanced undergraduate programs will graduate innovators with a breadth of vision who can be agents of positive change wherever they live and work. The faculty will strategically expand its graduate offerings, especially in areas where it can make a distinctive contribution, and will educate graduate students who are themselves producers of knowledge. The faculty will be recognized internationally for the quality of its research and creative activities in the humanities, social sciences, natural sciences, mathematical sciences, and interdisciplinary areas, whether undertaken in response to regional and global needs or to human curiosity and imagination. The faculty will provide a vital forum for open discussion and engage contemporary issues in ways that resonate far beyond our campus walls.

Undergraduate Programs

Students entering the Faculty of Arts and Sciences as freshmen, except those admitted as special students or auditors, select one of the following programs:

- Preparation for majors offered in Arts and Sciences
- Preparation for Business Administration, Health Sciences, Engineering and Architecture, or Agricultural and Food Sciences

Students entering the Faculty of Arts and Sciences as sophomores select one of the following two programs; for each program a period of three years of study is normally required:

- Bachelor of Arts
- Bachelor of Science

There are four major divisions in the Faculty of Arts and Sciences. Their distribution according to degree-offering departments is as follows:

- Humanities: Arabic, English, Fine Arts and Art History, History and Archaeology, and Philosophy
- Social Sciences: Economics, Education, Political Studies and Public Administration, Psychology and Sociology, Anthropology and Media Studies
- Natural Sciences: Biology, Chemistry, Geology, and Physics
- Quantitative Thought: Computer Science and Mathematics

Admission

For complete and detailed information regarding admission to the university, including certificates recognized, see the Admission section of this catalogue. The specific requirements for admission to the freshman or sophomore class are found under Applications for the Freshman Year and Applications to the Sophomore Year and All Other Undergraduate Programs under Admissions Office section.

Classification of Students

An undergraduate student shall be considered to have completed a class when s/he has taken and passed 30 or more credits beyond the requirements for the previous class.

A student will not be granted a certificate stating that s/he has completed a class until s/he has completed the specified courses in the regular program for that class and has acquired the requisite number of credits. The credit requirements are as follows:

Major and Faculty	**Freshman Standing**		**Sophomore Standing**	
For the completion of the freshman class	30 credits	-	-	-
For the completion of the sophomore class	60 credits	Cumulative	30 credits	-
For the completion of the junior class	90 credits	Cumulative	60 credits	Cumulative

Full-time Students and Maximum Credit Loads

To be considered full-time, a student must carry a minimum load of 12 credits per term. A full-time student who, for compelling reasons, is forced to reduce her/his load to fewer than 12 credits must first petition the Undergraduate Student Academic Affairs Committee for permission to do so. This should be done no later than 12 weeks after the start of the term (five weeks in the case of summer school). Students in their first term at AUB may be allowed to reduce their load to fewer than 12 credits by requesting permission from the Undergraduate Student Academic Affairs Committee. Requests are handled on a case-by-case basis.

Students can normally register for up to 17 credits per term and 9 credits during the summer term. English course requirements must be taken as of the first term at the university. Students who wish to register for more than 17 credits must petition the Undergraduate Student Academic Affairs Committee for permission to do so. Requests are handled on a case-by-case basis. Students in the following categories will normally be granted permission by the Undergraduate Student Academic Affairs Committee to register for more than 17 credits:

- Freshman students intending to go into engineering or medicine, and who have an average of at least 3.3 for the first term, may take an additional course in the second term.
- Graduating senior students in their last term who are not on academic probation and who have completed their English communication skills requirements at the level required by their major departments may register for a maximum of 18 credits.

Requirements for Premedical Study

For information on Premedical Requirements, refer to General University Academic Information.

Academic Rules and Regulations

For information on Academic Advisors, Categories of Students, Correct Use of Language, Grading System, and Graduation with Distinction and High Distinction, refer to General University Academic Information of this catalogue.

Graduation Requirements

Degrees of Bachelor of Arts and Bachelor of Science

The following are the graduation requirements for the degrees of BA and BS:

Residency and Total Credit Requirements

- A maximum of eight calendar years is allowed for graduation of students who begin with the freshman class, six calendar years for sophomores, four calendar years for juniors, and two calendar years for seniors. A student who fails to complete her/his degree program within these specified times must petition the Undergraduate Student Academic Affairs Committee for an extension of time.
- A minimum of eight terms of residence is required beginning with the freshman class, or six terms beginning with the sophomore class. For purposes of this requirement, two summer sessions shall be considered equivalent to one term for one time only.
- Transfer students from other recognized institutions of higher learning must complete at least 45 credits at AUB, out of which a minimum of 21 credits should be in the major. For the purposes of this requirement, two summer sessions shall be considered equivalent to one term.
- A minimum of 120 credits for students who enter as freshmen (90 of which should be courses numbered 200 or above) and 90 credits (in courses numbered 200 or above) for students who enter as sophomores.

Departmental Requirements

The requirements are a minimum of 36 credits in the major department, in courses numbered 200 or above, of which a minimum of 30 credits must be numbered 210 or above. Also, a cumulative average of 2.3 or C+ in the major plus any additional requirements set by the department. For the distribution of the requirements according to discipline, consult the matrices of the departments in each department entry.

A student must be admitted into her/his departmental major for at least the last term prior to graduation.

Repeating Courses

For information on Repeating Courses, refer to General University Academic Information.

Faculty Requirements

General Education Requirements

Refer to the General Education Program section.

Other Requirements

A student must complete elective credits outside his/her major department as per the program requirements, exclusive of the university course requirements stated above and beyond those of the normal freshman program. Grades of C+ or above in at least 50 credits of courses numbered 200 or above for students entering at the sophomore level are required. Students entering at the freshman level must obtain grades of C+ or above in at least 12 additional credits of courses numbered 100 or above.

Study Abroad

Regular FAS students (non-transfer students) in good standing who have completed 24 credits at the sophomore level at AUB and wish to study abroad in an approved program of study, may spend up to one year and earn up to thirty (30) credits at another university. Students must spend their final term in residence at AUB. Transfer of credits will be considered on a course-by course basis and is contingent upon achieving a grade equivalent to the AUB grade of C+. For more information on study abroad and credit transfer, refer to Study Abroad for Undergraduate Students and Credit transfer sections under General University Academic Information.

Transfers

Students may transfer to majors within the Faculty of Arts and Sciences from outside the university, from another faculty within the university, or from one department to another within the Faculty of Arts and Sciences.

Applicants from outside AUB wishing to transfer to a major in FAS with junior standing should note the following conditions and requirements:

- The applicant must have completed the equivalent of 24 sophomore credits at the university from which the applicant is transferring.
- The applicant must submit an application to the university Admissions Office along with all the course syllabi taken at the applicant's previous university or universities.

- Transfer admission is competitive and limited by the number of spaces available. Normally, successful applicants will have earned a minimum GPA of 3.0 or its equivalent.
- Courses successfully completed at a previous university or universities are transferred provided the student earned a grade equivalent to the AUB grade of C+ in each of the courses for which transfer credit is requested.
- For placement in (or exemption from) the Communication Skills Program, a student may petition for course equivalence by presenting relevant documents to the Department of English. If a student has not taken any courses equivalent to those offered within the Communication Skills Program, the student should be placed in the appropriate course based on the student's test scores (EEE, TOEFL, or SAT Writing), according to the same guidelines normally followed for newly admitted non-transfer students.
- Students who have transferred must complete at least 45 credits at AUB out of which a minimum of 21 credits should be in their major department for fulfillment of graduation requirements.

AUB students from other faculties wishing to transfer to a major in FAS should note the following conditions and requirements:

- The applicant must have completed at least two full terms (minimum 24 credits) of coursework at AUB.
- The applicant must have attained a minimum cumulative average of 2.3 or C+.
- The applicant must have attained a minimum average of 2.3 or C+ in all courses taken in FAS (must be at least 15 credits).
- The applicant must have met the requirements for the applicant's prospective major (see Table 1 below).

AUB students wishing to transfer from one major to another in FAS should note the following conditions and requirements:

- The applicant must have completed two full terms (minimum 24 credits) of work in the applicant's current major.
- The applicant must have met the requirements for the applicant's prospective major (see Table 1 below).

AUB Non-Degree Students (NDS) wishing to apply for regular status should note the following conditions and requirements:

- The applicant must submit an application to the Office of Admissions.
- The applicant must have completed the equivalent of the sophomore year at the college or university from which the applicant is transferring (24 credits or the equivalent).
- Grade requirements for transferred courses offered by other faculties at AUB follow the guidelines set by the relevant faculty. All final admissions decisions will depend on the availability of places in the major to which the student applies.
- Courses successfully completed at AUB by a non-degree student may be considered for admissions purposes. Once the student is admitted, the credits for those completed courses may be transferable towards the student's regular degree (required courses with a minimum grade of C+ and elective courses with a minimum grade of D.
- Courses successfully completed at a previous university or universities are transferred provided the student earned a grade equivalent to the AUB grade of C+ in each of the courses for which transfer credit is requested.

Double Major

Refer to Double Major/Concentration section under General University Academic Information.
Double major applicants must meet the transfer requirements for their prospective majors specified in Table 1.

Dual Degree

Refer to Dual Degree section under General University Academic Information.
Dual degree applicants must meet the transfer requirements for their prospective majors specified in Table 1.

Second Degrees

Refer to Second Degree section under General University Academic Information.
Normally, successful second degree applicants who obtained their first degree from outside AUB will have earned a minimum GPA of 3.0 or its equivalent in their first degree.

Majorless Status

Refer to Majorless Status section under General University Academic Information.
A student who wishes to join a new major must also submit a Change of Major petition to the Office of the Dean, provided the student meets the requirements for admission to the new major.

Table 1: Requirements for Interdepartmental Transfer within FAS

Major	Requirements
Applied Mathematics	a minimum cumulative average of 2.3 or C+ in MATH 201 and other math courses if taken
Arabic language and Literature	a minimum grade of C+ in ARAB 201 or any other upper level ARAB course
Archaeology	a minimum grade of C+ in any two Cultures and Histories courses, excluding Understanding Communication requirements in Arabic and English
Art History	a minimum grade of C+ in any two Cultures and Histories courses
Biology	a grade of B or above in each of BIOL 201 and BIOL 202, and a cumulative BIOL average of 3.0 if additional courses are taken (excluding FR courses); a grade of C+ or above in CHEM 201; and a minimum overall average of 3.0. The aforementioned requirements should be completed in 3 consecutive terms. Transfer to Biology from other departments within the Faculty of Arts and Sciences is competitive and requires departmental approval
Chemistry	a minimum grade of C+ in CHEM 201; a cumulative average of 2.3 or C+ or more in any one of the following three combinations: MATH 201 and MATH 202, or MATH 201 and PHYS 211, or MATH 201 and CHEM 21

Computer Science	completion of CMPS 211 (or MATH 211), a minimum grade of C+ in each of CMPS 201 and CMPS 202, and a cumulative average of 2.3 or C+ in all Computer Science courses taken
Economics	an overall average of 3.0 or more; a minimum grade of B in each of ECON 211 and ECON 212; a minimum average of 2.3 or C+ in ENGL 203 and ENGL 204 (if ENGL 204 is taken); and a minimum cumulative average of 2.3 or C+ in MATH 201 and MATH 202
Education	a minimum cumulative average of 2.3 or C+ in ENGL 203 and/or ENGL 204; a minimum cumulative average of 2.3 or C+ in EDUC course(s) if taken
English Language	a minimum grade of C+ in ENGL 203, 204, and 227
English Literature	a minimum grade of C+ in ENGL 203, 204, and one of ENGL 205, 207, and 209 (formerly 201)
Geology	a minimum grade of C+ in GEOL 201 and 203; an average of 2.3 or C+ is required in math and science courses - such courses cannot be taken more than twice; a minimum overall average of 2.3 or C+; completion of MATH 102 or its equivalent; and completion of 10 credits of freshman science courses including CHEM 101 and CHEM 101L, or their equivalents
History	a minimum grade of C+ in any two Cultures and Histories courses, excluding Understanding Communication requirements in Arabic and English
Mathematics	a minimum cumulative average of 2.3 or C+ in MATH 201 and other math courses if taken
Media and Communication	a minimum cumulative average of 3.0 in MCOM 201 and one List A Elective (of the student's choice), a minimum cumulative average of 2.3 in all MCOM courses taken, a minimum grade of B in ENGL 203, and a minimum cumulative average of 3.0 in ENGL 203 and ENGL 204 if taken.
Petroleum Geosciences	a minimum grade of C+ in GEOL 201 and 203; an average of 2.3 or C+ is required in math and science courses - such courses cannot be taken more than twice; a minimum overall average of 2.3 or C+; completion of MATH 102 or its equivalent; and completion of 11 credits of freshman science courses including CHEM 102 and CHEM 102L, or their equivalents.
Philosophy	a minimum grade of C+ in any two Cultures and Histories courses, excluding Understanding communication skills requirements in Arabic and English
Physics	a minimum cumulative average of 2.3 or C+ in PHYS 212, PHYS 214, and other physics courses if taken, and a minimum cumulative average of 2.3 or C+ in MATH 201 and MATH 202
Political Studies	a minimum grade of C+ in each of PSPA 201 and PSPA 202; and a minimum combined grade average of 2.3 or C+ in ENGL 203 and ENGL 204

Psychology	a minimum grade of B in PSYC 101 or PSYC 2011 and ENGL 204 and an overall average above 3.0 (PSYC 101 or PSYC 201 cannot be repeated more than twice)
Public Administration	a minimum grade of C+ in each of PSPA 201 and PSPA 202; and a minimum combined grade average of 2.3 or C+ in ENGL 203 and ENGL 204
Sociology-Anthropology	minimum grade of C+ in ENGL 203 and ENGL 204, and a grade of C+ or more in one of the following: SOAN 101, SOAN 103, SOAN 201, or SOAN 203. If admission to SOAN is based on SOAN 101 or SOAN 103, any additional SOAN or any social science course is required.
Statistics	a minimum cumulative average of 2.3 or C+ in MATH 201 and other math courses if taken
Studio Arts	a minimum grade of C+ in any two Cultures and Histories courses

For further details concerning individual departmental requirements, refer to the relevant sections of this catalogue.

Minors

For the university's general requirements for a minor field of study, refer to the Minor section under General University Academic Information. The Faculty of Arts and Sciences offers disciplinary and interdisciplinary minors, which require the completion of a number of courses before graduation as specified below:

American Studies requires 15 credits: AMST 215 and one other 3 credit AMST course (220, 230, 240, 265/266, 275/276), plus three elective courses with American Studies content or relevance from other departments (ARCH 023, ENGL 209, 215, 216, 219, 222, 224, 225, 226, 241, HIST 200, 271, 272, 273, 274, 278/279, MCOM 201, 204, 219, 222, 290E, MEST 315M, PHIL 263A, PSPA 220, 237, 251, 293D, SOAN 215). Students can petition to apply a new or special topics course with American Studies content from a different department, and this must be approved first by the CASAR director, then by the FAS Curriculum Committee.

Anthropology requires 15 credits: one core course (SOAN 203 or SOAN 212) and 4 electives from the following: SOAN 203, SOAN 212, SOAN 215-218, SOAN 220–227, SOAN 236, SOAN 237, SOAN 250-252, and SOAN 290 (if selected topic is in Anthropology).

Applied Mathematics requires 18 credits: MATH 201, MATH 210, either MATH 218 or MATH 219, and 9 more credits in mathematics courses numbered MATH 202, MATH 211 or above, and statistics courses numbered 230 or above. Note: A student can opt for a minor in mathematics or a minor in applied mathematics, but not both.

Arabic and Near Eastern Languages requires 15 credits: ARAB 211 or ARAB 212 (or an equivalent language course), at least one course in classical Arabic literature (ARAB 224, 229, 230, 231, 232, 233, 234, 235, 236, 241, 243, 244, 247, 249, 257, 290), at least one course in modern Arabic literature (ARAB 223, 225, 226, 237, 238, 239, 240, 245, 246, 253, 254, 258), plus two other courses in the department.

Archaeology requires 15 credits: Five courses numbered 200 and above, including one of the following: AROL 211, AROL 212, AROL 233, AROL 234, AROL 291, or AROL 292.

Art History requires 15 credits: 6 credits chosen from AHIS 203, AHIS 207, AHIS 208, AHIS 209, AHIS 210 or equivalents; 6 credits from AHIS 221, AHIS 224, AHIS 225, AHIS 226, AHIS 227, AHIS 249, AHIS 263, AHIS 281; and 3 credits from AHIS 250, AHIS 251, AHIS 252, AHIS 284, or approved alternate.

Biology requires 15 credits: BIOL 201 (4 credits), BIOL 202 (4 credits), plus at least two courses (provided the prerequisites of these courses are satisfied) to complete the 15 credits required for the minor, except BIOL 200, BIOL 209, BIOL 210, and BIOL 293.

Chemistry requires 16-17 credits: CHEM 201, one lab course from the following list (CHEM 201L, CHEM 203, CHEM 209 or CHEM 210) and a minimum of 12 credits from courses selected from at least three of the below four chemistry divisions:

- Analytical: CHEM 215, CHEM 219, CHEM 234
- Inorganic: CHEM 228, CHEM 229
- Organic: CHEM 207, CHEM 208, CHEM 211, CHEM 212
- Physical: CHEM 217, CHEM 218, PHYS 212, [CHEM 204 and MECH 310]

Typical choice of minors for different majors:

- Biology: 201, 201L/210, 211, 212, 215, 228 (16/17 credits)
- Physics: 201, 201L/209/210, PHYS 212, 215/217, 208/211/212/228 (16/17 credits)
- Geology: 201, 201L/209, 208, 215, 228, 229 (16/17 credits)
- Chemical Engineering: 201, 201L/209, 207, 219, (204 and MECH 310) (16/17 credits)

Civil Society, Citizenship, and the Nonprofit Sector requires 15 credits. The requirements are PSPA 222 and PSPA 272 and three electives from the following list of courses: PSPA 202, PSPA 203, PSPA 233, PSPA 235, PSPA 254, PSPA 257, PSPA 260, PSPA 263, PSPA 289G, PSPA 299, ECON 232, ECON 237, MCOM 217, MCOM 252, SOAN 225, SOAN 226, SOAN 240, and SOAN 245. No more than 12 credits can be taken from the same department. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Cognitive Science (Suspended as of Fall 2020-21) requires 18 credits: PSYC 237 is required. PSYC 237 cannot be counted as a psychology course for the purpose of this requirement. The remaining 15 credits must be chosen from the following courses: BIOL 240, 243, 244, CMPS 201, 211, 261, 262, EDUC 215, 221, ENGL 227, 228, 232, 284, 294, PHIL 211, 220, 221, 222, 223, 257 or 258 (but not both), PSYC 210, 222, 224, 226, 229, 280, on condition that the 15 credits chosen span at least three disciplines. A student may choose a special topics course not listed above (e.g., 290 course codes), provided the topic is within the purview of cognitive science, upon approval of the course coordinator. For single major students, only 3 credits of the 15 credits taken for the minor may count toward the major.

For double major students, 6 credits taken for the minor may count toward the majors, with no more than 3 credits per major. Students are encouraged to take PSYC 237 early in the minor.

Computational Sciences an interdisciplinary minor, requires 18 credits (excluding prerequisite courses): 12 required credits: (CMPS 201 or CMPS 203, CMPS 202, MATH/CMPS 251, MATH 281 or CMPS 254), plus 6 credits from the following: MATH 211 (or CMPS 211), DCSN 200, PHYS 222, or a tutorial course in either PHYS 231 or PHYS 232, a course in bioinformatics, or a chemistry course which has computational contents. New computational courses will be introduced by various departments as future electives for this minor.

Computer Science requires 18 credits: CMPS 201, CMPS 202, CMPS 211 (or MATH 211), CMPS 214, and 3 additional credits from the following: CMPS 215, CMPS 221, CMPS 231, CMPS 240, CMPS 241, and CMPS 271, and 3 additional credits from CMPS courses numbered 214 and above (except CMPS 297T). [Note: This minor is not open to students from the ECE Department]

Creative Writing requires 15 credits. Three courses chosen from ENGL 239, ENGL 249, ENGL 250, ENGL 251, ENGL 252, ENGL 253, 254, and ENGL 264. Two 200-level courses chosen from the offerings in Literature, including ENGL 236 (Creative Writing) or any course in creative writing offered by the Department of Arabic and Near Eastern Languages.

Critical Humanities requires 15 credits: CHLA 204 or CHLA 206, CHLA 209, and three courses chosen from CHLA 210-214.

Data Science for non-CMPS majors and non-ECE majors requires 18 credits: CMPS 201 or CMPS 203, CMPS 244, CMPS 261, CMPS 262, one of the following (STAT 201, STAT 210, STAT 230, STAT 233, BUSS 200, EDUC 227, ECON 213, or NURS 203), and MATH 218 or MATH 219.

Educational Psychology requires 15 credits: EDUC 215, EDUC 221, EDUC 223, EDUC 217, and either EDUC 280 or EDUC 232.

Educational Administration and Policy requires 15 credits: EDUC 211, EDUC 212, EDUC 213, either EDUC 215 or EDUC 225, and EDUC 230.

Economics requires 15 credits: ECON 211, ECON 212, one of ECON 214 or ECON 239 or ECON 243, at least one of ECON 217 or ECON 227, and at least one elective other than ECON 213 chosen from the available offerings, provided their prerequisite (or equivalent) has been satisfied.

English Language requires 15 credits: ENGL 227 and four other courses chosen from the department's Language offerings.

English Literature requires 15 credits: Two core courses from ENGL 205, ENGL 207, ENGL 209 (formerly ENGL 201), plus three other courses: one comparative literature course (ENGL 240 243), and any two courses from the different categories of the literature curriculum.

Environmental and Aquatic Sciences requires in addition to BIOL 202 or BIOL 200, a total of 15 credits: one course from BIOL 252, BIOL 250, BIOL 256; one course from BIOL 266, BIOL 246, BIOL 267, BIOL 255; the remaining credits are completed by choosing from the following: CHEM 202, PHIL 209, PSPA 288F, BIOL 240, BIOL 241, BIOL 245, BIOL 246, BIOL 250, BIOL 252, BIOL 254, BIOL 255, BIOL 256, BIOL 258, BIOL 259, BIOL 266, BIOL 267, BIOL 281, BIOL 286, AGSC 215, LDEM 230, AGSC 284, AGSC 295, LDEM 211, LDEM 215, LDEM 203, ENHL 220, CIVE 350, CIVE 450.

A minimum of three courses should be taken outside the student's major field of study and should be chosen from two different disciplines.

Film and Visual Culture requires 15 credits: two of the following core courses (ENGL 219 , MCOM 206, MCOM 222); two electives from the following: ENGL 241A, ENGL257 (A....Z), MCOM219, MCOM220, MCOM221, MCOM 223, MCOM 225, MCOM 230, SOAN 236, SOAN 250, or other classes/special topics courses approved by the coordinator of the minor program; and one elective from the following: ENGL 239, ENGL 254A, MCOM 245, MCOM 246 or special topics courses approved by the coordinator of the minor program.

Gaming for CMPS majors, Engineering, or other Sciences requires 18 credits: CMPS 202, CMPS 285, CMPS 288, two courses from ENGL 264, ENGL 297, MCOM 291P, and one of ENGL 245G or EDUC 275.

Gaming for students majoring in Social Sciences or Humanities: 18 credits are required as follows: CMPS 201, CMPS 204, GRDS 141, two courses from ENGL 264, ENGL 297, MCOM 291P, and one of ENGL 245G or EDUC 275.

Geology requires 15 credits: Core course GEOL 201, and any four courses of the following: GEOL 209, GEOL 211, GEOL 213, GEOL 222, and GEOL 227.

History requires 15 credits: five courses numbered 200 and above. All students, especially those considering graduate work in history, are encouraged to take HIST 287 as one of the five courses.

Human Rights and Transitional Justice, an interdisciplinary minor requires 15 credits: SOAN 245, SOAN 240 or PSPA 235, and three electives from the following: SOAN 221, MCOM 216, MCOM 217, SOAN 232, SOAN 242, PSYC 212, PHIL 216, PHIL 252, PSPA 222, PSPA 232 any special topics course in SOAN, PSYC, PHIL, PSPA, which will fit with the minor topic, upon the approval of the respective department chair and the coordinator of the minor program. Students majoring in sociology-anthropology should take at least three courses other than SOAN courses.

International Law for non-PSPA majors requires 15 credits: PSPA 213 and PSPA 225; plus three upper-level courses from the following list: PSPA 223, PSPA 226, PSPA 228, PSPA 232, PSPA 233, PSPA 235, PSPA 239, PSPA 288 (if related to the minor's emphasis and approved by the PSPA Department), PSPA 293B, 293C, 293F, PSPA 299 (if approved by the PSPA Department) and SOAN 245.

International Law for Political Studies majors requires 15 credits: PSPA 225, and four upper-level courses from the following list: PSPA 223, PSPA 226, PSPA 228, PSPA 232, PSPA 233, PSPA 235, PSPA 239, PSPA 288 (if related to the minor's emphasis and approved by the PSPA Department), PSPA 293B, 293C, 293F, PSPA 299 (if approved by the PSPA Department) and SOAN 245. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Marine Sciences and Culture requires 15 credits: MSCU 201, MSCU 202, and MSCU 203, plus any two electives from the following: MSCU 204, MSCU 211, AROL 211, 213, 214, 215, 216, 217, 218, 221, 222, 223, 224, 225, 226, BIOL 246, 255, GEOL 201, 210, 214, and 222.

Mathematics requires 18 credits: MATH 201, MATH 210, either MATH 218 or MATH 219; and 9 more credits in mathematics courses numbered 202, 211, or above; and statistics courses numbered 230 or above. Note: A student can opt for a minor in mathematics or a minor in applied mathematics, but not both.

Media and Communication requires 15 credits: two requirements from the following: MCOM 201, MCOM 202, MCOM 203 or MCOM 204; two List A electives from: MCOM 205, MCOM 206, MCOM 215 to MCOM 239, MCOM 290 - MCOM 292; one List B elective from MCOM 240 to MCOM 259, MCOM 293.

Music requires 15 credits: 6 credits from: MUSC 220, 221, 230, 235, 239, 250. 6 credits from: MUSC 200, 205, 231. 3 credits from: MUSC 262, 263, 265, 266, 269.

Philosophy requires 15 credits from courses numbered 200 and above, including at least two of the following courses: PHIL 211, PHIL 213, PHIL 214, and PHIL 225.

Physics requires 18 credits: PHYS 212, 221L and one of the following three courses (PHYS 210, PHYS 211 or PHYS 214), plus 9 credits selected from PHYS 217, PHYS 220, PHYS 226, PHYS 235, PHYS 236 or a special topic course.

Political Studies for non-PSPA majors requires 15 credits: PSPA 201; one of the following three: PSPA 210, PSPA 211, or PSPA 213; and any three upper level courses from the following list: PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 222, PSPA 223, PSPA 225, PSPA 228, PSPA 229, PSPA 231, PSPA 232, PSPA 233, PSPA 234, PSPA 235, PSPA 236, PSPA 237, PSPA 238, PSPA 239, PSPA 250, PSPA 251, PSPA 252, PSPA 253, PSPA 254, PSPA 255, PSPA 256, PSPA 286, PSPA 288, PSPA 290, PSPA 291, PSPA 292, and PSPA 299. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Political Studies for Public Administration majors requires 15 credits: one of the following courses: PSPA 210, PSPA 211 or PSPA 213; and any four upper level courses from the following list: PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 222, PSPA 223, PSPA 225, PSPA 228, PSPA 229, PSPA 231, PSPA 232, PSPA 233, PSPA 234, PSPA 235, PSPA 236, PSPA 237, PSPA 238, PSPA 239, PSPA 250, PSPA 251, PSPA 252, PSPA 253, PSPA 254, PSPA 255, PSPA 256 or PSPA 288. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Psychology requires 15 credits: PSYC 201, PSYC 280; plus three electives from PSYC 210–236. A minimum cumulative average of 2.7 is required.

Public Administration for non-PSPA majors requires 15 credits: PSPA 202, PSPA 212, plus three upper-level courses from the following list: PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 273, PSPA 275, PSPA 277, PSPA 278, PSPA 288, PSPA 297, or PSPA 298. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Public Administration for Political Studies majors requires 15 credits: PSPA 212; plus four upper-level courses from the following list: PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 273, PSPA 275, PSPA 277, PSPA 278, PSPA 289, or PSPA 297. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Public Policy requires 15 credits: PSPA 202, PSPA 260 and PSPA 276; plus two upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, PSPA 278, PSPA 297, or PSPA 298. No more than 9 credits may be used to satisfy a requirement for another major or minor. Political Studies majors choosing to minor in Public Policy are required to take a minimum of 15 credits as follows: PSPA 260 and PSPA 276; plus three upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, PSPA 278, PSPA 297, or PSPA 298. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Reporting in the Digital Age requires 15 credits: Three core courses: MCOM 226, MCOM 240 and MCOM 246, and two additional electives from the following: MCOM 215, MCOM 225, MCOM 241, MCOM 244 (a to z), MCOM 245, MCOM 247, MCOM 250, MCOM 251 and any new or related special topics courses as approved by the Program.

Semitic Studies requires 15 credits: ARAB 213/214 or Syriac 215/216; a second Semitic language other than Arabic (ARAB 213 or 215); ARAB 222; and one of the following: ARAB 211 or 212, ARAB 216, ARAB 227 or ARAB 228, AROL 293/294, AROL 217, AROL 218, AROL 219/220, AROL 226, AROL 227, AROL 228, AROL 231.

Social and Political Thought requires 15 credits: PSPA 210 or PHIL 216, one senior seminar, and three courses from: ENGL 222, ENGL 235, ENGL 240, ENGL 243, ENGL 247, PHIL 210, PHIL 225, PHIL 251, PHIL 252, PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 290A, PSPA 290B, PSPA 290C, SOAN 213, SOAN 221, SOAN 223, SOAN 290 (after securing the approval of the SPT Committee), ARCH 021, ARCH 022, ARCH 037, ARCH 039 and GRDS 020. No more than 9 credits can be taken from the same department; no more than 3 credits can be counted toward the student's major; no more than 6 credits can be taken from the student's home department.

Sociology requires 15 credits: SOAN 201, SOAN 213, SOAN 237, plus two electives from the following: SOAN 210, SOAN 220, SOAN 222, SOAN 223, SOAN 224, SOAN 225, SOAN 232, SOAN 240–242, SOAN 245 and SOAN 290 (if selected topic in Sociology). If a student has taken SOAN 101 and, therefore, cannot take SOAN 201, they should take SOAN 213, SOAN 237, and three of the electives listed above.

Software Development and Design This minor can be attained by any AUB student except Computer Science, Computer and Communications Engineering (CCE), and Computer Science and Engineering (CSE) students. It requires 18 credits and has no prerequisite courses to get started: CMPS 201, CMPS 202, CMPS 244, CMPS 271 and two of CMPS 270, CMPS 278, CMPS 279 and CMPS 288.

Statistics can be pursued via one of two options:

- Option 1: MATH 201, MATH 218 or MATH 219, STAT 231, STAT 233, STAT 234 and STAT 235.
- Option 2: MATH 201, MATH 218 or MATH 219, STAT 230, STAT 234, STAT 235 and one additional advanced course in statistical sciences to be selected with the approval of the department chair.

STEAM Education requires 15 credits: EDUC 230, EDUC 220, EDUC 273, either EDUC 218 or EDUC 231, and either EDUC 271 or EDUC 272.

Studio Arts requires 15 credits: Twelve credits taken from the following courses according to sequence and following prerequisites: SART 200, SART 201, SART 202, SART 203, SART 204, SART 206, SART 207, SART 208. Three credits in art history taken from AHIS 203, AHIS 204, AHIS 207, AHIS 208, AHIS 209, AHIS 221, AHIS 222, AHIS 224, AHIS 225, AHIS 226, AHIS 227, AHIS 249, or approved alternative.

Theater requires 15 credits: One of the following options, representing 6 credits, is required: THTR 259 or THTR 250 and THTR 258. Remaining credits may be taken from among the following courses: ARAB 240, CHLA 263, ENGL 212, ENGL 216, ENGL 251, ENGL 297, or any course that significantly addresses theater, performance, or dramatic literature, with approval of the chair.

Translation requires 15 credits: two core courses: ARAB 225 and ENGL 233. Three courses from the following list: ARAB 211, ARAB 212, ARAB 226, ARAB 227, ARAB 228, ENGL 221, ENGL 231, ENGL 240-243, ENGL 247, ENGL 255 - any letter, ENGL 262– any letter, or any course offered by the Department of English with a significant translation studies component, with approval of the Chair of the department.

Women and Gender Studies, an interdisciplinary minor, requires 15 credits: ENGL 234 (Gender and Language), ENGL 258 (any letter) (Gender and Sexuality), EPHD 334 (Reproductive Health), HIST 262 (Gender in Classical Islamic Society), HPCH 202 (Sexuality and Public Health), SOAN 225 (Gender and Culture) Or Special Topics, seminars, and/or course sections with emphases on Gender, Sexuality, and/or Women's Studies – with approval by the Chair of the Department of English.

Students who opt for a minor (one or more) must do so while working toward their undergraduate degree at AUB.

To graduate with a minor, a student must meet the requirements specified in the Minor section under the General University Academic Information.

Students who have completed the requirements for a minor in any department should fill the Completion of minor petition and submit it through the Online Petitions and Forms System (OPFS) after the grades are out and within the deadline set by the Registrar's office. The transcript of the student shall indicate the minor(s) chosen.

FAS Diplomas

Diplomas and Teaching Diplomas: Refer to Department of Education in this catalogue.

Diploma in Development Studies: Refer to Department of Sociology, Anthropology, and Media Studies in this catalogue.

Directed Study

A student with an average of at least 3.7 in her/his major at the beginning of the senior year may elect to pursue a course of directed study. Students with averages below 3.7 may be admitted to directed study at the discretion of the department.

Students who elect a course of directed study choose their subject of directed study in consultation with a faculty member selected by the student with the department's approval. The directed study may consist of independent research, original creative compositions, or directed reading, and it includes the presentation of a report or thesis.

Tutorials

Students can register for a single tutorial of up to 3 credits during their final year at AUB after securing the permission of their department. Grades for tutorials are either P (Pass) or NP (No Pass).

Dean's Honor List

To be placed on the dean's honor list at the end of the term, a student must:

- be carrying at least 12 credits,
- have passed all courses and attained a term average of 3.7, or be ranked in the top 10 percent of the class and have an overall average of 3.3,
- not have been subjected to any disciplinary action within the university during the term,
- and be deemed worthy by the dean to be on the honor list.

Attendance and Withdrawal from Courses

For information on Attendance and Withdrawal from Courses refer to the General University Academic Information in this catalogue.

Examinations and Quizzes

Students who miss an announced examination or quiz must present an excuse considered valid by the instructor of the course. Unless stated otherwise in the course syllabus, the course instructor should then require the student to take a makeup examination. Makeups for quizzes and midterms as well as class assignments must be completed before the final grade of the course is issued at the end of the term. Only medical reports and/or qualified professional opinions issued by an AUB employee, AUB Medical Center (AUBMC) doctor, or by the University Health Services will be accepted. If there is a question about the validity of any excuse presented by the student, the matter will be referred to the Undergraduate Student Academic Affairs Committee. Instructors should make sure that there is no time conflict between an exam and a regularly scheduled course.

Grading Policies, Incomplete Grades and Makeup Examinations

For information on the Grading System, refer to General University Academic Information.

All faculty members in FAS are to submit their final course grades electronically no later than 72 hours after the final examination.

The work for a course in FAS must be completed by the date on which the term ends. Students who have completed all the course work but missed the final exam or failed to submit papers or projects in lieu of the final exam (depending on course requirements) may be given an incomplete grade upon submission of a valid excuse to the course instructor. The procedures related to such cases are as follows.

Incomplete course work is reported with an "I" followed by a letter grade that reflects the evaluation of the student by the end of the term. This evaluation should be based on a grade of zero for all missed work. Typically, an incomplete grade ranges from IF to IC+. The "W" option is not available to faculty members; all course withdrawals should be entered by the Office of the Registrar. The grades "X", "blank" or "I" without a letter grade should not be reported. Only the Undergraduate Student Academic Affairs Committee can grant permission to make up for missed final exams, papers or projects in lieu of the final exam. To obtain permission to complete the work in a course, a student must submit a petition via the Online Petition and Forms System (OPFS). Whenever possible, medical excuses should be issued by the University Health Services (UHS) or the AUB Medical Center (AUBMC). If the reason for the incomplete work is considered valid by the course instructor, the student's incomplete request is forwarded through the petition workflow for approval. Incomplete requests must be submitted via the OPFS within two weeks of the scheduled date of the missed final exam/paper of the course in question. Late requests will not be entertained without a valid justification.

Once the petition is approved by the Undergraduate Student Academic Affairs Committee (USAAC), the student will be permitted to complete work for the course no later than four weeks of the start of the next regular term (excluding summer, since summer is not considered a regular term). After consulting with the student involved, the course instructor sets the time and date of the makeup/due date of the final course work within this specified period. It is the responsibility of the student to find out from her/his instructor the specific dates by which the work should be completed. If the student's incomplete request is not approved by USAAC, the course instructor is not entitled to give the student any makeup exams or assignments.

After the course work is completed and evaluated by the instructor, the latter should report the grade in a timely manner via OPFS. Once the change of grade is approved by USAAC, it will be forwarded to the Office of the Registrar and the new grade will be reflected on the student's transcript. If the reporting of the grade is late, then it will be considered by USAAC and either approved or declined. Failure to complete incomplete work within the period of four weeks will result in dropping the "I" on the reported course grade and the available letter grade (or numeric grade) becoming the final grade in the course. If the incomplete request petition is not submitted in due time (two weeks after the scheduled date of the final exam) or if the request is turned down by the Undergraduate Student Academic Affairs Committee, the "I" on the reported course grade will be dropped. The available letter (or numeric) grade becomes the final grade in the course.

The procedure to be followed in requesting to change a grade that was erroneously reported on the AUB SIS is as follows. The "change of grade" request found on OPFS should be

submitted by the course instructor immediately when the error is found. The request will then be forwarded to the Chair of the department offering the course and afterwards to the Undergraduate Student Academic Affairs Committee. The course instructor should specify the nature of the error made on the form and attach a copy of the original class list with all grades given and the detailed course grading scheme. The Undergraduate Student Academic Affairs Committee will take note of this change of grade, which will be immediately reported to the Office of the Registrar. Requests for change of grade will not be considered after a period of four weeks from the beginning of the next regular term.

Academic Probation

Departmental Probation and Dismissal from a Department

Students will be placed on departmental probation if their average in major courses drops below 2.3 or C+ in their first two terms in the major. Departments will drop students from their major in case they have an average below 2.3 or C+ in the major courses at the end of their third regular term in the major.

Placement on Academic Probation

Refer to Probation section under General University Academic Information.

Removal of Probation

Refer to Probation section under General University Academic Information.

Credit Load for Students on Academic Probation: The load of a student who is in her/his first term on probation shall not be fewer than 12 or more than 17 credit hours. The load of a student who continues on probation beyond one term shall neither be fewer than 12 nor more than 13 credit hours. During a summer session, all students on probation shall carry loads of no more than 7 credits.

Dismissal from the Faculty

Refer to Dismissal and Readmission section under General University Academic Information.

Application for Readmission

Refer to Dismissal and Readmission section under General University Academic Information. When, in accordance with university regulations, a student is dropped, the implication is that s/ he is not qualified to continue her/his education at AUB. Consideration for readmission is given only if, after spending at least one year, 24 credits, at another recognized institution of higher education, the student is able to present a satisfactory record with no failure. The student must have achieved a grade equivalent to the AUB grade of C+ in each of the courses for which transfer credit is requested. Transfer credit is considered after departmental evaluation of a student's coursework. The foregoing regulations on readmission also apply to students dropped from other AUB faculties who apply for admission to the Faculty of Arts and Sciences.

Failure

If a student fails a course, no re-examination is permitted. If a course is required for graduation, a student failing the course must repeat it.

A student may not register for a course more than three times, including withdrawals. For the third registration, permission from the student's academic advisor and the academic unit concerned is required.

The Arts and Sciences Undergraduate Student Academic Affairs Committee may consider a fourth registration under special circumstances.

A student who at the end of her/his senior year fails to attain a cumulative average of 2.3 in her/ his major field is required to take additional courses in that field or to repeat courses in which the student has scored low grades, provided s/he is permitted to continue at the university.

Summer Session

Maximum Load

The maximum academic load during a regular summer session is 9 credits (7 credits for students on probation).

Degree Courses

The degree courses offered during the summer session are identical in standard and content to those offered during the fall and spring terms. For information on Non-Degree Courses and Summer Orientation Programs, refer to the sections on Department of Education and AUB Extension Programs in this catalogue.

Courses

FAS Numbers Preceding Course Titles

- Freshman Courses: They are numbered from 101 to 199; are ordinarily taken during the freshman year and may be counted toward graduation but only as part of the freshman program.
- Introductory Courses: They are from 200 to 209 and may be counted toward graduation whenever taken but cannot be considered as part of the 30 credits above 210 required in the major field.
- Advanced Undergraduate Courses: They are from 210 to 299 and may be counted as credits in the major field.
- Graduate Courses: They are from 300 to 499 (available to senior undergraduates in good standing and upon securing the consent of the department). Odd-numbered courses are normally offered during the fall term whereas even-numbered courses are normally offered during the spring term.

Numbers Following Titles of Courses

The first number following the title of a course indicates the number of class hours given each week.

The second number indicates the laboratory or practice hours required each week. The third number indicates the number of credit hours applied toward graduation. The credit assigned to each course is stated for the term. Each hour of laboratory is considered a 1/3 to 1/2 credit hour. Courses marked annually are offered at least once during each academic year. Other courses marked alternate years and each term are given accordingly. When frequency of offering is not indicated, the course is offered at the discretion of the department.

Course Descriptions

For those requiring additional information, more detailed course descriptions are available in the individual department sections of this catalogue.

Courses Offered by Other Faculties

Students in the Faculty of Arts and Sciences may also take, for credit, elective courses offered in other faculties. However, FAS students cannot be given academic credit for the following courses: NFSC 220, AVSC 279, and AVSC 280. With regard to courses taken in other Faculties, all prerequisites must be satisfied. Some courses may require prior approval from the faculty concerned.

Freshman Program

Director:	El Hajj, Izzat

The freshman program requires the completion of 30 credits, regardless of the student's target major. Out of these 30 credits, the Ministry of Education and Higher Education requires that:

- For arts majors:
  - At least 9 credits must be in the humanities and social sciences (with at least 3 credits in each of these two areas)
  - At least 3 credits must be in the natural sciences
  - At least 3 credits must be in mathematics
  - 15 credits may be in elective courses
- For science majors:
  - At least 9 credits must be in the humanities and social sciences (with at least 3 credits in each of these two areas)
  - At least 12 credits must be in the natural sciences and mathematics (with at least 3 credits in mathematics and 6 credits in natural sciences)
  - 9 credits may be in elective courses

In addition, the university requires that 3 credits are taken as ENGL 203. If a student is placed in ENGL 102, it may be considered an elective. These students are still required to take ENGL 203 after ENGL 102 to complete their freshman year requirements. Students who take ENGL 203 in their freshman year should take any 3-credit course at the 200-level in place of ENGL 203 to meet the degree requirements for their target major.

Finally, specific departments may have additional transfer requirements depending on the student's target major of study. These requirements are listed in Table 1 for majors at FAS and in Table 2 for majors in other faculties. A checklist for each major is provided on the website of the freshman program to assist students in meeting the ministry requirements, university requirements, and departmental transfer requirements.

Freshman students must complete 30 freshman credits before they can enroll in courses that count towards their sophomore class. Exceptionally, students who have completed at least 26 freshman credits and have at most 4 freshman credits remaining may enroll in courses that count towards their sophomore class for a single semester only. However, they may not enroll in a second semester and take courses that count towards their sophomore class until they have completed the 30 freshman credits entirely. Students must also satisfy the require-

ments listed under the Admission section of this catalogue and the Undergraduate General University Academic Information section of the catalogue in order for their freshman year to be granted the equivalency of the Lebanese Baccalaureate Part II.

Advisors

Each freshman student is assigned an advisor who mentors the student in course selection. Students will work with their advisors until they have completed their freshman requirements and submitted their freshman equivalence regardless of whether they have been admitted to a major. Students who do not join a major in three terms are considered majorless and are re-assigned an advisor for majorless students.

Transfer to a Major

Any student in the freshman year who is not on probation at the time of application may join a major upon completing at least 26 credits and meeting the major's transfer requirements.

Any freshman student who wishes to join a major within the Faculty of Arts and Sciences must meet the departmental requirements shown in Table 1. To join a major, the student must submit a "Change of Major" petition to the FAS Undergraduate Admission Committee, provided that the student meets the requirements for admission to the major. At FAS, late freshman students are considered freshman students for the purpose of transfer up to their third regular semester or up to their fourth regular semester if they have only completed at most 45 credits.

Any freshman student who wishes to transfer to a major in another faculty must meet the faculty requirements shown in Table 2.

Freshman Courses

Freshman students must take all their non-elective credits as 100-level courses. Some of these courses are listed below, arranged according to the areas of study.

Humanities: AHIS 150, ARAB 101, ARAB 102, AROL 101, CHLA 110, CHLA 111, CHLA 112, ENGL 101, ENGL 103, ENGL 104, ENGL 105, ENGL 106, ENGL 107, ENGL 108, HIST 101, HIST 102, HIST 103, HIST 104, MUSC 150, PHIL 101, PHIL 102, SART 150, SOAN 103, THTR 100.

Social Sciences: ECON 101, ECON 102, PSPA 101, SOAN 101, PSYC 101.

Mathematics: MATH 100, MATH 101, MATH 101I, MATH 102.

Natural Sciences: BIOL 101, BIOL 102, BIOL 104, BIOL 105, BIOL 106, CHEM 101, CHEM 101L, CHEM 102, CHEM 102L, GEOL 101, GEOL 102, GEOL 103, GEOL 104, PHYS 101, PHYS 101L, PHYS 103, PHYS 103L, and ENHL 105 from the Faculty of Health Sciences.

Electives: Any of the courses listed above may be counted as elective courses. In addition, some additional freshman courses that do not fall into any of the above categories and that may be counted as elective courses include: BUSS 101, CMPS 101, ENGL 102.

Courses Numbered 200 and Above

Some courses numbered 200 and above are suitable for freshman students and may be counted among the elective credits only. Note, however, that these courses are also open to sophomores, juniors, and seniors and therefore may be more competitive than courses offered at the 100 level.

Math Placement

By default, freshman students are placed in the appropriate math course based on their Math SAT score as follows:

- Students with a Math SAT score of at least 700 will be placed in Math 101.
- Students with a Math SAT score between 570 and 690 will be placed in MATH 101 Intensive.
- Students with a Math SAT score of at most 560, or without a Math SAT score, will be placed in MATH 100.

The Math Placement Test (MPT) is an optional test for students who wish to improve their initial placement. If students opt to take the MPT, they will be placed according to their result in the test as follows:

- Students with a score of at least 70% will be placed in MATH 101.
- Students with a score between 60% and 70% will be placed in MATH 101 Intensive.
- Students with a score below 60% will be placed in MATH 100.

Students placed in MATH 101 still have the option to take Math 100 or Math 101 Intensive if they choose to do so. Some target majors may only require MATH 100.

Table 1: Requirements to Join a Major in FAS from the Freshman Class

Department	Requirements	Some Useful Electives
Applied Mathematics	a minimum cumulative average of 2.3 or C+ in MATH 101 and 102, and a minimum grade of C+ 2.3 in MATH 102	MATH 201
Arabic	a minimum cumulative average of 2.3 or C+ in ARAB 101 (and 102 if taken)	
Archaeology	a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	AROL 101 and 201
Art History	a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	AHIS 150 and SART150
Biology	a minimum grade of B in each of the following: BIOL 101 and BIOL 102, CHEM 101, CHEM 101L, PHYS101 or PHYS 103, and completion of MATH 101; and a minimum overall average of 2.3 or C+ in the freshman year	STAT 210 and CMPS 209
Chemistry	a minimum cumulative average of 2.3 or C+ in CHEM 101, CHEM 101L, CHEM 102, and CHEM 102L; and a minimum cumulative average of 2.3 or C+ in MATH 101 and 102; and the completion of PHYS 101 and PHYS 101L	

Computer Science	a minimum cumulative average of 2.3 or C+ in MATH 101 and 102 and a minimum cumulative average of 2.3 in all courses taken	CMPS 201 and MATH 211
Economics	a minimum cumulative average of 2.3 or C+ in MATH 101 and MATH 102, and a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	ECON 101, 102, 103, 211, 212 and CMPS 209
Education	a minimum cumulative average of 2.3 or C+ in the freshman year	
English Language	a minimum cumulative average of 2.3 or C+ in English Language courses taken in the freshman year	ENG107, ENG 108
English Literature	a minimum cumulative average of 2.3 or C+ in English Literature courses taken in freshman year	ENGL 101, 103, 104, 105, and 106
Geology	completion of MATH 101, 102, CHEM 101, CHEM 101L, GEOL 101, a third science course, and a minimum cumulative average of 2.3 or C+ in the freshman year	GEOL 101, 102, 201, and 203
History	a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	HIST 101, 102, 103 and 104
Mathematics	a minimum cumulative average of 2.3 or C+ in MATH 101 and 102, and a minimum grade of C+ in MATH 102	MATH 201
Media and Communication	a minimum cumulative average of 2.3 or C+ in the freshman year, a minimum cumulative average 2.3 or C+ in English courses taken in the freshman year	MCOM 203
Petroleum Geosciences	completion of MATH 101, 102, CHEM 101, 101L, 102, 102L, GEOL 101, and a minimum cumulative average of 2.3 or C+ in the freshman year	GEOL 101, 102, 201, 203, ECON 101, 102, 103, 203 and SOAN 201
Philosophy	a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	PHIL 101 and 102
Physics	a minimum cumulative average of 2.3 or C+ in PHYS 101 and 101L, and a minimum cumulative average of 2.3 or C+ in MATH 101 and 102	CMPS 201

Political Studies	a minimum cumulative average of 2.3 or C+ in the freshman year, and a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	PSPA 101, ECON 103, and PSYC 101
Psychology	a minimum grade of B in PSYC 101 or 201, a minimum grade of B in ENGL 203, a minimum grade of B in ENGL 204 (if taken) and an overall average of 3.0	PSPA 101, 201, 202, PHIL 201, CMPS 206, ECON 203, and one of STAT 201 or EDUC 227
Public Administration	a minimum cumulative average of 2.3 or C+ in the freshman year, and a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	PSPA 101 and PSYC 101
Sociology-Anthropology	a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	SOAN 101, 103, PSPA 101, HIST 101-104, ARAB 101, 102, ENGL 101-109 and PHIL 101,102
Statistics	a minimum cumulative average of 2.3 or C+ in MATH 101 and 102, and a minimum grade of C+ in MATH 102	MATH 201
Studio Arts	a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	AHIS 150 and SART 150

Table 2: Requirements to Join a Major in another Faculty from the Freshman Class

Major/Faculty	Requirements	Some Useful Electives
Agribusiness	completion of MATH 101, any combination of natural science courses totaling 9 credits, and a cumulative GPA of at least 2.3 in the freshman year	CHEM 200 and courses in the humanities
Agriculture	completion of MATH 101, CHEM 101, CHEM 101L, and BIOL 101, and a cumulative GPA of at least 2.3 in the freshman year	CHEM 200 and courses in the humanities
Architecture	completion of MATH 101 and 102, any combination of science courses totaling 9 credits, and overall average of at least 3.3 in the freshman year	an elective in the humanities or social sciences
Business	a minimum cumulative average of 3.0 or B in at least 24 credits during the freshman year, and a minimum grade of B in any one	ECON 101, 102 and ECON 211 or 212

	of the following courses: MATH 100, MATH 101, MATH 102 (Refer to Mathematics Department for course requirements)	
Chemical Engineering	completion of MATH 101 and 102, CHEM 101, 101L and 102, 102L, PHYS 101 and 101L, and a cumulative average of at least 3.3 in the freshman year	an elective in the social sciences
Engineering	completion of MATH 101 and 102, CHEM 101, 101L, PHYS 101, and PHYS 101 L, and a cumulative average of at least 3.3 in the freshman year	an elective in the humanities or social sciences
Environmental Health	completion of MATH 101, CHEM 101 and CHEM 101L	ENHL 105, PHYS 101/103 and BIOL 101
Food Science and Management	completion of MATH 101, CHEM 101, 101L, and BIOL 101, and a cumulative average of at least 2.7 in the freshman year	CHEM 200, and courses in the humanities
Graphic Design	completion of the freshman program and a cumulative average of at least 3.3 in the freshman year	CVSP 229, 233, ECON 203, EDUC 211, ENGL 213, PHIL 211, SOAN 201, and PSYC 202
Health Communication	a minimum cumulative average of 2.3 or C+ in the freshman year, a minimum cumulative average of 2.3 or C+ in English courses taken in the freshman year	
Landscape Architecture	any combination of natural science courses totaling 9 credits, and a cumulative GPA of at least 2.3 in the freshman year	an elective in each of geology, chemistry, and biology
Medical Audiology Sciences Frozen as of Fall 2021-22	completion of PHYS 103 and 103L, MATH 101, MATH 102 and BIOL 101	CHEM 101 and CHEM 101L
Medical Imaging Sciences	completion of PHYS 103 and 103L, MATH 101, MATH 102 and BIOL 101	CHEM 101 and CHEM 101L
Medical Laboratory Sciences	completion of MATH 101 and 102, CHEM 101, CHEM 101L, CHEM 102, CHEM 102L and BIOL 101	PHYS 103 or PHYS 101
Nursing	completion of BIOL 101, CHEM 101, CHEM 101L, MATH 100, and MATH 101, and a minimum cumulative average of 2.7	courses open to freshman students, except SOAN 101/201 and PSYC 101/201

Nutrition and Dietetics	completion of CHEM 101,101L, and BIOL 101, and a cumulative average of at least 3.0 in the freshman year. Admission is by selection of the most promising eligible applicants.	CHEM 200, SOAN 201, and courses in the humanities

General Education Program

Director:	Bashour, Bana
Executive Officer:	Najiya, Dalia

AUB is committed to offering its students a broad undergraduate liberal arts education. The aim of the General Education Program is to help us understand ourselves, the world and our role in it. To do so, the program enables students to acquire the analytical skills and habits of lifelong learning that will allow them not only to become effective in whatever area or career they choose, but also to become active citizens of the world. Students will be exposed to a range of intellectual experiences during their time at AUB, including those allowing them to reflect on their own values and responsibilities. We want to give our students the opportunity to make choices and question and test what they believe are their career goals, intellectual interests, and roles in the world.

While being exposed to various fields of knowledge, we also want our students to have the opportunity to experience different modes of learning (lectures, seminars, labs and independent research projects, experiential learning). Different modes of analysis are designed to enhance students' verbal and interactive skills (seminars), writing and analytic skills (research projects), and hands-on experimental skills (laboratories).

In addition to courses in their academic majors and possible minor concentrations in specific fields, all AUB students must satisfy the General Education requirements by taking a minimum of 36-39 credits distributed as follows:

Ways of Understanding

- 3 credits in Understanding Communication (Arabic)
- 6 credits in Understanding Communication (English) through ENGL 204 (ENGL 206 in MSFEA)
- Quantitative Reasoning (3-6 credits)
- Writing in the Discipline (3 credits from within the major)

Understanding Ourselves

- Cultures and Histories (9 credits)
- Societies and Individuals (6 credits)

Understanding the World

- Understanding the World (3-6 credits)

Students are required to take a total of 9 credits from Understanding the World and Quantitative Reasoning with at least 3 credits from each.

Understanding Our Role in the World

- Human Values (3 credits)
- Community-Engaged Learning (3 credits)

Thematic Requirements

- Social Inequalities (3 credits from any designation)
- History of Ideas (3 credits from CHLA)

All undergraduate students are required to take one Arabic course during their undergraduate degree to fulfill the Understanding Communication (Arabic) requirement. Students who completed the Lebanese Baccalaureate may register in any Understanding Communication (Arabic) course, except for Arabic as a Foreign Language courses. Students who did not do the Lebanese Baccalaureate are required to take an Arabic Placement Test. These students will be placed in an Understanding Communication (Arabic) course that is appropriate for their Arabic skills, which may include Arabic as a Foreign Language courses.

All new undergraduate students at AUB are required to take Understanding Communication (English) Courses. New undergraduate students are placed in one of the English Communication Skills Courses on the basis of their scores on the TOEFL, the AUB-EN, the SAT Writing or any equivalent standardized test. The Department of English offers a sequence of two core courses, ENGL 203 and ENGL 204, to all AUB undergraduates, and two specialized courses, ENGL 206 to MSFEA students and ENGL 208 to OSB students. A new undergraduate student is placed in one of the core courses in the sequence upon matriculation and has to complete the sequence in successive terms.

All students are required to take 9 credits of Cultures and Histories courses and 3 credits of Human Values. All students who wish to register in these courses should have demonstrated English language skills, which placed them in ENGL 203 or above. A minimum of 3 credits must be taken in History of Ideas: CHLA. For details, refer to the Critical Humanities and Liberal Arts section. One elective for all majors should cover the theme of Social Inequalities.

In addition, all undergraduate students are required to take a 3-credit Writing in the Discipline course, which is normally offered in the major.

These distribution requirements may be met by either required or elective courses.

A comprehensive list of approved General Education courses can be found on the General Education Program website. Active General Education courses in any term may be searched by subject through the AUBSIS homepage (Search for General Education Courses). Students are expected to refer to their major degree requirements available in this catalogue before registering their GE courses.

Students who transfer from other universities or take study-abroad courses should submit the Course Equivalence petition to their faculties for courses that could count towards fulfilling their GE requirements.

Double Major, Dual Degree and Second Degree

Students enrolled for dual degrees must satisfy the General Education requirements of both majors. Students enrolled for a double major or a second degree should satisfy the General Education requirements of one major. For more information on Double Major, Dual Degree and Second Degree, please refer to the General University Academic Information.
Website: https://www.aub.edu.lb/generaleducation/Pages/default.aspx

Department of Arabic and Near Eastern Languages

Chairperson:	Khansa, Enass
Professors:	Baalbaki, Ramzi M. (Margaret Weyerhaeuser Jewett Professor of Arabic); Jarrar, Maher Z.; Orfali, Bilal W. (Sheikh Zayed Chair for Arabic & Islamic Studies)
Assistant Professors:	AbdelMegeed, Maha; Khansa, Enass
Senior Lecturers:	Bazzi, Tarif; Fakhreddine, Jawdat
Lecturers:	Atiyyah, Najah; Bou Fadel, Najem; Ghaddar; Hussein; El Daif, Rachid; Moukaled, Sina; Sultany Kanawaty, Rima; Zein, Raghida
Instructors:	El Mallah, Jihad; Malti, Samir; Semaan, Rima

In addition to the BA degree in Arabic language and Literature, the Department of Arabic and Near Eastern Languages provides service courses for all students at AUB. ARAB 101 and ARAB 102 must be taken in the freshman year in addition to one more Arabic course (i.e., ARAB 201, ARAB 202, or any other course numbered ARAB 211 or above [ARAB 213, ARAB 214, ARAB 215, ARAB 216, ARAB 217, ARAB 219, and ARAB 220-222 excluded]).

BA in Arabic language and Literature

Mission Statement

The Department of Arabic and Near Eastern Languages has always possessed a leading role in its own field of learning in the Arab World, while being the only one maintaining a liberal tradition of education and research. The impressive number of diverse prominent scholars, writers and intellectuals who passed through the department testifies to this remarkable historical achievement. The department has always sought to train students in the basic tools of the discipline, namely language and research skills, while exposing them to the essentials of the field, and subjecting everything to the curiosity of the inquiring mind.

Degree Requirements

Major Requirements

Requirements for the BA degree in BA in Arabic language and Literature are as follows: ARAB 211, ARAB 212, ARAB 224, ARAB 231, ARAB 232, ARAB 233, ARAB 237, ARAB 239, ARAB 241, ARAB 243, and ARAB 245 (total 33 credits). In addition, the student must select one course from within the other courses in the department (36 total credit hours).

Students choosing a minor in Arabic are required to take 15 credits of Arabic courses. These courses should include ARAB 211 or ARAB 212 (or an equivalent language course), one course in classical Arabic literature, one course in modern Arabic literature, and any two courses in the department.

The minor in Semitic Studies requires 15 credits: ARAB 213/214 or Syriac 215/216, a second Semitic language other than Arabic (ARAB 213 or 215), ARAB 222, and one of the following: ARAB 211 or 212, ARAB 216, ARAB 227 or ARAB 228, AROL 293/294, AROL 217, AROL 218, AROL 219/220, AROL 226, AROL 227, AROL 228, AROL 231.

When a required course is not available, it may be replaced by another course within the department provided the student's advisor gives consent.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Course Descriptions

ARAB 101 Readings in Arabic Heritage I 3.0; 3 cr.
Introduces students to key language and analytical skills. It takes the students on a journey through a number of disciplines that are central to a liberal arts education such as: anthropology, psychology, sociology, history, and literature. During the course, students explore examples from pivotal contributions to these fields by intellectuals writing in Arabic while also sketching the history of these fields in the Arabic speaking world. In the process, students hone their ability to write, communicate, and analyze in Arabic. Annually.

ARAB 102 Readings in Arabic Heritage II 3.0; 3 cr.
Arab 102 is a thematic introduction to pre-modern critical thought in Arabic. Possible themes include: Visions of Utopia, Conceptions of the Intellect, and notions of Justice. In exploring these themes, the course is equally anchored in the present, excavating the continued resonance of these debates for contemporary thought. In the process, students develop their reading and analytical skills through engaging with these texts while also sharpening their writing and research skills. Annually.

ARAB 200 Special Arabic 3.0; 3 cr.
A course designed for native speakers of Arabic who have limited pre-college formal study of the Arabic language in Lebanon or abroad. Open to students who are exempted from Arabic. Every term.

ARAB 201 Issues in Contemporary Arab Culture 3.0; 3 cr.
This course aims to explore a number of themes related to contemporary Arab culture(s) and further develop students' communication skills and academic writing in Arabic. Themes which will be examined include: Arab culture(s) and change in a globalized world, tradition and modernity, the self and the other, dynamics of religion and society, women and gender in a changing world, Arab youth and artistic expression. Every term.

ARAB 202 Arabic Technical Writing 3.0; 3 cr.
The course provides guidance in the production of non-literary texts in modern written Arabic, with attention to structure, stylistics, and diction of letters, memos, emails, resumes, reports, proposals, descriptions, instructions, and various types of documentation. Emphasis is on the analysis and production of appropriate rhetorical styles in the various genres of technical communication used in the workplace. Every term.

ARAB 203/204 Beginners' Arabic as a Foreign Language I and II 5.0; 3 cr. (each)
This sequence of courses introduces students who have no previous knowledge of Arabic to the Arabic language and culture within its Lebanese setting. The course utilizes an integrated approach to Arabic and emphasizes communicative tasks and contexts. By the end of the course, students will be able to speak and write simple connected sentences about themselves, their families and their immediate environment, and read and listen to short authentic texts. By the end of the course sequence, students reach Intermediate-Low to Intermediate-Mid proficiency in Arabic on the ACTFL scale. Prerequisite for ARAB 204 is ARAB 203 or placement by a placement exam. Every term.

ARAB 205/206 Intermediate Arabic as a Foreign Language III and IV 5.0; 3 cr. (each)
This course sequence aims to further enhance students' proficiency in the various skills by expanding their vocabulary, control of pronunciation and grammatical structures, and cultural knowledge. The course utilizes an integrated approach to Arabic that is based on communicative tasks and contexts. Students' activities at this level involve giving oral presentations and doing writing projects. By the end of this course sequence, students reach Intermediate-Mid to Intermediate-High proficiency in Arabic following the ACTFL scale. Prerequisites: ARAB 203 and ARAB 204, or placement by a placement examination. Every term.

ARAB 207/208 Advanced Arabic as a Foreign Language I and II 3.0; 3 cr. (each)
This course sequence aims to enable students to reach advanced proficiency in Arabic in all skills. Students are required to do extensive readings on a variety of topics and genres, such as literature, language and the social sciences. They are also expected to engage in debates, give oral presentations and write short research papers. The course utilizes an integrated approach to Arabic and is based on communicative tasks and contexts. By the end of this course sequence, students reach Advanced-Low to Advanced-Mid proficiency in Arabic following the ACTFL scale. Prerequisites: ARAB 205 and ARAB 206, or placement by a placement examination. Every term.

ARAB 209 Advanced Arabic as a Foreign Language III 3.0; 3 cr.
This course aims to enable students to reach the Advanced-High level in the various skills in Arabic. Readings at this level are extensive and span a variety of genres. Listening skills are sharpened through extensive work with news broadcasts, documentaries, and television shows in both Standard and Lebanese Arabic. The course also features extended oral presentations in class and extensive writing activities. Special emphasis is placed on understanding the nuances of the language and the use of idiomatic expressions and rhetorical devices in all language skills. Prerequisites: ARAB 207/208 or placement by a placement examination. Every term.

ARAB 210A Writing Prose 3.0; 3 cr.
A course designed for students who wish to identify and pursue their own creative interests in writing fiction and creative non-fiction. Through discussions, assigned readings, writing exercises and critiques of student writing in a workshop mode, students will critically examine the elements of literary creation. Every term.

ARAB 210B Writing Poetry 3.0; 3 cr.
A course designed for students who wish to identify and pursue their own creative interests in writing poetry. Through discussions, assigned readings, writing exercises and critiques of student writing in a workshop mode, students will critically examine the elements of poetic genres. Annually.

ARAB 211/212 Survey of Arabic Grammar 3.0; 3 cr. (each)
A year-long course on Arabic morphology and grammar. It is comprised of readings from a classical grammatical text and training in sentence structure through i`raab. Annually.

ARAB 213/214 Introductory Biblical Hebrew 3.0; 3 cr. (each)
A class that teaches Biblical Hebrew allowing students who have no background in the subject to read the Bible and discover one of the founding books of our society and a major source of inspiration to many authors throughout history. Prerequisite for ARAB 214 is ARAB 213 or permission of instructor. Annually.

ARAB 215 Introductory Syriac 3.0; 3 cr.
The course provides students with working knowledge of Syriac language and grammar. With the help of a lexicon, students will be expected to read and translate simple Syriac texts. Annually.

ARAB 216 Intermediate Syriac 3.0; 3 cr.
This course complements ARAB 215/MEST 330 'Introduction to Syriac Language', focusing on the reading, translation, and analysis of Syriac texts from various authors, genres, and time periods. In addition, the course provides a review of Syriac grammar. It is intended for those students who have taken the introductory course ARAB 215/MEST 330 or who already have a basic knowledge of Syriac and wish to continue studying the Syriac language for a second term. Prerequisite: ARAB 215 or permission of instructor. Annually.

ARAB 217 Introduction to Syriac Literature 3.0; 3 cr.
The aim of this introductory course is to provide the student with an overview of Syriac literature from its origins to the present day. Students who receive credit for ARAB 217 cannot receive credit for MEST331. Annually.

ARAB 219 Turkish 3.0, 3 cr.
A beginner to mid-level course in modern Turkish with initial emphasis on spoken Turkish and a gradual introduction to reading.

ARAB 220 Introductory Persian I 3.0; 3 cr.
An elementary-level course designed to help students start learning Persian by introducing the Persian alphabet and building communicative skills. The emphasis is on speaking and using the language for communication but all four language skills (listening, speaking, reading, and writing) as well as pronunciation and vocabulary will be emphasized. Every term.

ARAB 221 Introductory Persian II 3.0; 3 cr.
An elementary-level course that helps students continue to expand upon what they have learned in Introductory Persian I. Like its prerequisite, this course also focuses on using the language for communication while teaching all four language skills (listening, speaking, reading, and writing). Annually.

ARAB 222 Introduction to Semitic Studies 3.0; 3 cr.
This class places the Semitic languages of the Levant (Arabic, Hebrew, Phoenician, and Syriac) in their historical perspective by introducing the discipline of Semitic studies, especially in its comparative orientation. Especial emphasis is placed on Arabic dialectology, an often-overlooked aspect of Semitic studies. Annually.

ARAB 223 Arabic for the Media 3.0; 3 cr.
This writing-intensive course seeks to familiarize students with Arabic journalism writing styles over a comprehensive range of story styles and regional news outlet house styles. Special attention is paid to the specialized vocabulary of news reporting. Every term.

ARAB 224 Arabic Stylistics and Metrics 3.0; 3 cr.
A detailed study of stylistics balagha and metrics ‘arud. This course surveys the contribution of the Arabs to stylistic studies and introduces their theory of versification. Annually

ARAB 225/226 Translation 3.0; 3 cr. (each)
A year-long course divided into a brief introduction and an extended segment in applied translation. In the introduction, theoretical problems and issues of translation are discussed. The course is then transformed into an extended workshop where students will be preoccupied with their own translation exercises from and into both Arabic and English. Every term.

ARAB 227/228 Arabic Linguistics 3.0; 3 cr. (each)
These two courses deal with various topics of Arabic linguistic sciences, mainly phonetics, semantics, and lexicology. Annually

ARAB 229 Background to the Study of Classical Arabic Literature 3.0; 3 cr.
A course dealing with the impact of Greek culture on classical Arabic literature and thought, and the rise and development of Arab intellectualism. Annually.

ARAB 230 Themes and Genres of Arabic Literature 3.0; 3 cr.
A broad overview of Arabic literature throughout the ages. This course primarily emphasizes the literary production embodied in the works that give Arabic literature its unique character in different periods, while concentrating on the major themes and genres around which this literature revolves. Annually.

ARAB 231 Arabic Poetry: The Heroic Age 3.0; 3 cr.
A course highlighting characteristic elements of Arabian life in its heroic age prior to Islam, while considering its individual, tribal, and mythical codes. Main problems, sources, and strains of the poetry of this age are surveyed. The substantial component of the course is comprised of critical analysis of representative poems. Annually.

ARAB 232 Arabic Poetry: The Age of Conquest, Love, and Nostalgia 3.0; 3 cr.
A survey of new genres of poetry that blossomed when desert Arabs were deployed outside their peninsula following the conquests. This is examined through a compact probe of the economic, social, and political factors that affected Arabian life, from the advent of Islam to the end of the Arabian (Umayyad) era. The substantial component of the course is comprised of critical analysis of representative poems. Annually.

ARAB 233/234 Abbasid Poetry 3.0; 3 cr. (each)
A survey of Arabic poetry during the Abbasid period that considers the historical, political, and social background. The first part of the course deals with the major poets of the early Abbasid era, which ends during the reign of al-Mu’tasim while the second part surveys the poetry of the latter Abbasid age up to the fall of Baghdad. Annually.

ARAB 235 Andalusian Literature 3.0; 3 cr.
An introduction to Arabic literature in Islamic Spain. Students read and analyze Andalusian poetry and prose, with special emphasis on the new literary forms that appeared in al-Andalus. Annually.

ARAB 236 Qur’anic Studies 3.0; 3 cr.
An introduction to major Qur’anic issues such as the collection of the Qur’an, Qur’anic imagery, and the various trends in Qur’anic exegesis. Annually.

ARAB 237/238 Modern Arabic Poetry 3.0; 3 cr. (each)
A year-long course studying the factors that shaped modern Arabic poetry, tracing the phases of its development, and analyzing in detail its various characteristics. Annually.

ARAB 239 Modern Arabic Novel 3.0; 3 cr.
Tackles landmark novels and examples of short fiction. Proceeding largely in chronological order, the sequence of readings addresses genres such as historical novels and autobiographies, as well as themes including war, exile, and gender. Annually.

ARAB 240 Modern Arabic Drama 3.0; 3 cr.
A survey of the rise and development of the dramatic literary genre in modern Arabic, with a focus on the main factors that led to the rise of drama. Students will thoroughly analyze a number of selected works by prominent Arab playwrights. Annually.

ARAB 241 Literary Theory and Criticism 3.0; 3 cr.
A course on the development of Arab literary theory and criticism from the classical period to the present. This course is structured according to the main themes that concerned Arab critics throughout the ages, as well as the major critical trends and their prominent representatives. Annually.

ARAB 243 Classical Arabic Prose 3.0; 3 cr.
A course in which students read and analyze extracts from the works of major prose writers representing the main trends in classical Arabic prose, beginning with pre- Islamic times up to the age of al-Ma`arri. Annually.

ARAB 244 Muslim Schools of Theology 3.0; 3 cr.
A survey of the main doctrines, terms, and modes of expression that are peculiar to the major Muslim sects (firaq) in the medieval age, and the impact they had on literature. Mu`tazila, Ash`ariyya, and Imamiyya constitute the focal point of the course, which includes readings in selected representative texts. Annually.

ARAB 245/246 Background to the Study of Modern Arabic Literature 3.0; 3 cr. (each)
A two-semester course dealing with the Arab cultural renaissance of 1800–1940. Special emphasis is placed on the impact of the West on the making of the modern Arab literary culture. Annually.

ARAB 247 Arabic Classical Folk Literature 3.0; 3 cr.
A course covering the following topics: Folktales, the novella in The Arabian Nights, and the hero sagas such as Sirat Bani Hilal. This course aims at studying the textual history of this special genre, its language, motives, and structures. Students are also exposed to various methodological approaches to folk literature. Annually.

ARAB 248 Christian-Muslim Encounters 3.0; 3 cr.
A collaborative investigation of select topics in Arab and Middle Eastern History viewed from multiple perspectives. Periodic progress reports and the incorporation of findings in an interpretive term paper are required. Senior status and permission of instructor are required. Students who receive credit for ARAB 248 cannot receive credit for ISLM 341. Annually.

ARAB 249 Sufi Literature 3.0; 3 cr.
A course aiming to acquaint students with Sufi literature as one of the major aspects in Arabic literature. Annually.

ARAB 251/252 Special Topics in Arabic Language and Literature 3.0; 3 cr. (each)
A course that varies in content and focuses on selected topics in language and literature. May be repeated for credit. Annually.

ARAB 253 Contemporary Literature in Times of Change 3.0; 3 cr.
A course on 21st century prose and poetry. As it retraces the manifestation of canonical tropes in contemporary literature, the course focuses on the topics, writers, and genres that emerge in times of change and upheavals. Annually.

ARAB 254 The City in Arabic Literature 3.0; 3 cr.
A course on how modern and/or classical writers imagined cities in poetry and prose. Special attention will be given to the concepts of loss, exile, and collective memory in the representation of urban spaces in prose and poetry. Annually.

ARAB 256 Judeo-Arabic and the Arabic Writings of Maimonides (Ibn Maymum) 3.0: 3 cr.
An introduction to Judeo-Arabic (Middle Arabic) focusing on Ibn Maymun and his writings. The class emphasizes the influence of Arabic on medieval Hebrew. Through the reading of his texts, students will discover the Andalusian physician and philosopher from his childhood in Cordova to his position as the personal doctor of Salaheddine and the head of the Jewish community in Cairo. Alternate years.

ARAB 257 The Maqamat 3.0; 3 cr.
The course is devoted to the two major representatives of the maqamat genre, its precursor al-Hamadhani (d. 1008) and his more famous emulator al-Hariri (d. 1122). The course will include both close reading of selected passages and discussion of the entire texts of the maqamat. The readings are supplemented by additional texts from other genres in Arabic literature which share sources, literary features, or common discourse with the maqamat, such as faraj ba'd al-shidda stories, anecdotes, popular tales, letters, treatises, and ornate prose. Alternate years.

ARAB 258 Arabic Language & Identity 3.0: 3 cr.
A course that examines the interplay between language and identity in the contemporary Arb world. The course explores the definitions of "identity" and the various factors that shape it within individuals and communities. Special focus is placed on analyzing language and identity debates in Lebanon, the Maghreb, Iraq, and the Gulf region and framing them within their relevant historical, ethnic, and socio-economic contexts. Annually.

ARAB 290 Undergraduate Seminar on al-Mutanabbi 3.0; 3 cr.
A seminar on the times, life, and poetry of this major Arab poet. It combines the historical and the literary analytical-critical methodologies. Its substantial component comprises close textual analysis of poetry from the different phases of the poet's intertwined private and public life. Alternate years.

33 + 3 Credits in Arabic

Modes of Analysis	English and Arabic (9)	Cultures and Histories Values (12+33+3+9)	Societies and Individuals (6)	Understanding the World Quantitative Reasoning (9: 3/6 + 3/6)	Community-Engaged Learning (3)

Lecture Courses (9+12+33+ 3+9+6+3)	Required Arabic Course (3) Required English Courses: ENGL 203 (3), 204 (3)	Required credits in the Cultures and Histories: 9 credits in History of Ideas and 3 credits Human Values Required Arabic courses (33): ARAB 211(3), 212(3), 224(3), 231(3), 232(3), 233(3), 237(3), 239(3), 241(3), 243(3), 245(3) One elective course from the following or a seminar course (3): ARAB 213(3), 214(3), 218(3), 221(3), 225(3), 226(3), 227(3), 228(3), 229(3), 230(3), 234(3), 235(3), 236(3), 238(3), 240(3), 244(3), 246(3), 247(3), 249(3) Electives: 9 credits in other Cultures and Histories	Electives (6)	electives (9): (Recommended: a course in computer literacy	required (3)
Seminar (0–6)		Elective Arabic courses: ARAB 251(3), 252(3)			
Laboratory (3)				Computer Lab (3)	
Research project (63)		ARAB 227–241, 243–247, 249			

Department of Biology

Chairperson:	Kambris, Zakaria S.
Professors:	Bariche, Michel J.; Baydoun, Elias H.; Gali-Muhtasib, Hala U.; Knio, Khouzama M.; Kreydiyyeh, Sawsan I.; Osta, Mike A.; Saoud, Imad P.; Smith, Colin A.; Talhouk, Rabih S.
Associate Professors:	Ghanem, Noel D.; Jaalouk, Diana E.; Kambris, Zakaria S.
Assistant Professors:	Sadek, Riyad A.
Lecturers:	Rizkallah, Hind D.; Sinno-Saoud, Nada
Instructors:	Hajjar, Layane A.M.; Al-Zein, Mohammad S.
Adjunct Faculty:	Dohna, Heinrich; Parker, Bruce; Skinner, Margaret

BS in Biology

Mission Statement

The BS program in Biology prepares students for advanced study and careers in research, education, and service in Biology-related disciplines. Students will acquire descriptive, experimental, quantitative, and conceptual abilities spanning molecular, cellular, organismal, and ecological levels. Lecture and laboratory courses will emphasize model systems, the role of evolution, diversity of living systems, hypothesis-based reasoning, and communication skills. Science, social science, and humanities coursework will foster creativity, free thought, interdisciplinary skills, and commitment to ethical scholarship.

Degree Requirements

All students admitted as sophomores are eligible to continue in the program provided they obtain, by the end of their third regular term at AUB, a minimum average of 2.3 C+ in their biology courses. Students seeking to be readmitted to the program after being dropped must meet transfer requirements. Students will be considered for transfer to Biology provided they obtain a minimum grade of B in BIOL 201 and B in BIOL 202 and a C+ or above in CHEM 201 and a 3.0 or above overall average. Meeting the minimum requirements for joining the biology department does not guarantee acceptance. Transfer to Biology from other departments within the university is competitive and requires departmental approval.
The requirements for a BS degree in Biology are 90 credits for students entering the department at the sophomore level. The distribution of these courses is as follows:

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree require-

ments (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Major Requirements

Students majoring in biology are required to complete 37 credits of Biology: BIOL 201, 202, 220, 223, two of the following four courses: BIOL 224, 252, 260, 270 (students are not allowed to register for two of those four courses during the same term unless they have an F or a W on their transcript for one of these courses from a previous term and students cannot register for two semi-required courses during the same semester; however, justified exceptions need chair's approval), BIOL 293, and a minimum of 13 credits in biology elective courses, including at least one lab course. Additionally, BIOL 296 (a 0-credit exit survey) must be taken in the last term of study.

Students are also required to complete 15 credits of Understanding the World, CHEM 201, 210, 211, 212 and PHYS 204 with PHYS 204L, or PHYS 205 with PHYS 205L.

To earn a minor in Biology, students must pass 15 credits of biology. The courses are BIOL 201 (4 credits), BIOL 202 (4 credits), plus at least two courses (provided the prerequisites of these courses are satisfied) to complete the 15 credits required for the minor.

Unless otherwise stated, only senior undergraduate biology majors with an average of 3.3 or above can register in biology graduate courses with consent of the instructor.

Students from any field can minor in aquatic and environmental sciences by completing, in addition to BIOL 202 or BIOL 200, a total of 15 credits chosen from the following three lists:

- List 1: BIOL 252, BIOL 250, BIOL 256
- List 2: BIOL 266, BIOL 246, BIOL 267, BIOL 255
- List 3: CHEM 202, PHIL 209, PSPA 288F, BIOL 240, BIOL 241, BIOL 245, BIOL 246, BIOL 250, BIOL 252, BIOL 254, BIOL 255, BIOL 256, BIOL 258, BIOL 259, BIOL 266, BIOL 267, BIOL 281

Land and Water Resources: AGSC 215, LDEM 230
Plant Sciences: AGSC 284, AGSC 295
Landscape: LDEM 211, LDEM 215
Ecosystem Management: LDEM 203
Environmental Health: ENHL 220
Civil Engineering: CIVE 350, CIVE 450

One course from each of lists 1 and 2 is required. All students should take at least three of the total required courses in a field outside their major field of study, and these courses should be from at least two different disciplines. Only one of the courses taken from lists 1 and 2 by biology majors minoring in environmental and aquatic studies is counted toward the major.

Course Descriptions

BIOL 101 Basic Concepts in Biology 3.0; 3 cr.
A course that deals with the basic concepts in biology, and prepares students for BIOL 201 and BIOL 202. This course introduces the student to the forms and functions of plants and animals, and to the principles of genetics, evolution, and ecology. Every term.

BIOL 102 Basic Concepts in Biology II 3.0; 3 cr.
This course is only intended for freshman students who have taken BIOL 101 and plan to continue their education in the field of biological sciences as it prepares students for BIOL 201 and 202. The course introduces students to the forms and functions of animals. It covers basic anatomy and physiology of animal systems and emphasizes the evolutionary relationships between the different groups of animals. It also introduces students to basic concepts in ecology. Prerequisite: BIOL 101.

BIOL 104 Introduction to Organismal Biology 3.0; 3 cr.
The course introduces basic principles of organismal biology through study of representative groups of unicellular organisms, plants and animals. Topics include the origins of life, major events in the history of life, adaptations of organisms to particular environments, patterns of reproduction in plants and animals, form and function, physiology, and locomotion in animals and ecology. The course is for students who will not continue their education in the sciences. Every term.

BIOL 105 Introductory Biology 3.3; 4 cr.
An introduction to the fundamental principles of biology. This course covers the basis of life, the structure and function of cells and systems, the general classification and diversity of plants and animals, as well as genetics and ecology. Occasionally.

BIOL 106 Contemporary Issues in Biology 3.0; 3 cr.
course designed to provide freshman students with the scientific background to some of the current topics in biology today. The course introduces students to the general concepts of biology, including origins of life, evolution and organic building blocks. Moreover, the course will cover socially important contemporary topics such as human evolution, fresh water issues, ecology, environmental conservation, cloning, stem cell research, GMOs, diseases and nutrition. Topics will be added and removed as new discoveries are made and news changes. Every term.

BIOL 200 Diversity of Life 3.3; 4 cr.
A course that deals with the basic aspects of cell structure and function, heredity, diversity, classification, evolution and interrelationships of living things, and briefly covers organs and systems in animals and plants. Laboratory activity reflects the contents of the course. Not open to biology majors and minors. Sophomore standing is required. Every term.

BIOL 201 General Biology I 3.3; 4 cr.
An integrated approach to the biology of organisms covering the organization of life, energy transfer through living systems, perpetuation of life, and diversity of life. Every term.

BIOL 202 General Biology II 3.3; 4 cr.
A study of the anatomy and physiology of plants and animals covering their structure, growth, nutrition, transport, reproduction, development, and control systems. This course focuses also on the relationships between structure and function, and stresses the evolutionary adaptation and changes in the different systems of the major plant and animal groups. Prerequisite: BIOL 201. Every term.

BIOL 209 Concepts and Connections 3.0; 3 cr.
A course that covers the basic aspects of cell structure and function. An overview of heredity, diversity and evolution. Interrelationships of living things and a brief coverage of organs and systems in animals. Not open to biology majors and minors. Sophomore standing is required. Every term.

BIOL 210 Human Biology 3.0; 3 cr.
A course that covers the fundamental principles of cell biology, genetics, and human biology, with emphasis on the morphology, physiology, and disorder of body systems. Not open to biology majors and minors. Students cannot receive credit for all three of the following: BIOL 201, BIOL 202, BIOL 210. Every term.

BIOL 220 Introductory Biochemistry 3.0; 3 cr.
An introduction to the structure-function relationships of biomolecules, cells, enzymes, and the metabolic reactions of living cells. Prerequisites: BIOL 202 and CHEM 211. Every term.

BIOL 223 Genetics 3.3; 4 cr.
A course that deals with the basic principles of classical and modern genetics with emphasis on the analysis of genetic material and genetic processes at the molecular level. Prerequisite: BIOL 202. Every term.

BIOL 224 Microbiology 3.3; 4 cr.
A course that deals with micro-organisms, especially bacteria, and in particular those of pathogenic and industrial importance. This course includes basic knowledge on isolation, classification, and the various metabolic processes. Prerequisite: BIOL 223. Every term.

BIOL 225 Molecular Biology 3.0; 3 cr.
A course that introduces the different techniques of molecular biology and recombinant DNA technology, and discusses the most recent advances in the field. Prerequisite: BIOL 223. Occasionally.

BIOL 234 Vascular Plants 2.3; 3 cr.
A course that deals with the structure, life history, and classification of vascular plants, including psilophytes, club mosses, horsetails, ferns, conifers, and flowering plants, emphasizing their evolutionary relationships. Prerequisite: BIOL 202. Occasionally.

BIOL 236 Plant Systematics 2.3; 3 cr.
A course that deals with the relationships between and among vascular plants based on evolutionary principles as expressed by systematics. The course provides underlying principles of systematics, including modern molecular technological approaches. Students deal with plant identification, and classification of the major families of local vascular plants. Prerequisite: BIOL 202. Occasionally.

BIOL 240 Animal Behavior 3.0; 3 cr.
A course that covers the basic concepts of animal behavior including physiological, genetic, ecological, and evolutionary aspects, as well as exploration of the controversial ideas of sociobiology. Annually.

BIOL 241 Biology of Invertebrates 3.3; 4 cr.
A study of invertebrates, excluding insects, emphasizing their morphological and functional diversity, phylogenetic relationships, classification, development, and adaptation. Prerequisite: BIOL 202. Annually.

BIOL 243 Behavioral Neuroscience 3.0; 3 cr.
An introduction to the neural basis of behavior. The course surveys the structure and organization of the human brain and how complex behavior arises from it. Prerequisite: PSYC 101 or PSYC 201. Annually.

BIOL 244 Introduction to Neurobiology 3.0; 3 cr.
A comprehensive introduction to neural signaling, brain development and adult brain regeneration. The course covers molecular to higher organizational level of neural functions. It emphasizes the fundamental principles and mechanisms associated with brain development and physiology including nerve communication, neurogenesis, patterning and regionalization as well as neural stem cells function. Prerequisite: BIOL 202. Annually.

BIOL 244L Neurobiology Lab 0.3; 1 cr.
The course will introduce the students to basic concepts of neurobiology including brain and cranial nerve anatomy, brain development, adult brain derivatives, spinal cord reflex, receptor and action potentials, nerve degeneration and special senses. The students will learn to perform a combination of manipulations ranging from live brain dissections to histological staining and analyses and will use plastic models and computer simulation. Animal models studied include sheep, chicken, frog and mouse. Pre- or corequisite: BIOL 244. Annually.

BIOL 245 Environmental Physiology of Aquatic Organisms 3.0; 3 cr.
A course that describes the strategies used by aquatic animals to deal with environmental variations. The course covers various animal physiological systems with an emphasis on aquatic adaptations. Some topics such as air bladder control, electrical generation and reception, and gill excretion which are specific to aquatic organisms are introduced herein. Prerequisite: BIOL 200 or BIOL 202. Annually.

BIOL 246 Marine Biology 3.3; 4 cr.
A course that introduces the biology of life in the marine environment (microbial world, seaweeds and plants, marine animals) as well as the structure and function of the marine ecosystem (e.g., coral reefs, ocean depths, estuaries). The course also covers the impact of humans on the marine environment. Prerequisite: BIOL 202. Every term.

BIOL 247 Animal Physiology 3.0; 3 cr.
A study of the fundamental principles and mechanisms that govern body functions in animals, with an emphasis on the molecular aspects. Prerequisite: BIOL 202. Annually.

BIOL 249 Parasitology 3.3; 4 cr.
A general overview of the classification, morphology, development, and physiology of human and animal parasites. Prerequisite: BIOL 202. Annually.

BIOL 250 Biosphere 3.0; 3 cr.
A course that focuses on defining global environmental problems such as global warming, acid rain, deforestation, and loss of biodiversity, and introduces methods that can help eliminate or reduce these problems. Annually.

BIOL 251 Introduction to Bioinformatics 3.0; 3cr.
An introduction to the foundations of modern bioinformatics. The course covers databases, data formats, algorithms, and statistical concepts for analyzing biological data with special emphasis on sequence and gene expression data. Annually.

BIOL 251L Bioinformatics Lab 0.3; 1 cr.
A bioinformatics computer lab. The lab section introduces the programming language R, the de-facto standard in biological data analysis. Students learn how to use R packages, write scripts, and write functions to analyze sequence, genomics, and gene expression data. No prior programming experience is required. Annually

BIOL 252 Ecology 3.3; 4 cr.
A study of organisms in relation to their biotic and abiotic environment. This course deals with population growth and regulation, species diversity, age structure, succession, food chains, energy flow, and recycling of nutrients. Prerequisite: BIOL 202 or LDEM 209. Every term.

BIOL 253 Phylogenetics 3.0; 3 cr.
A course that introduces the concept of phylogenetic trees, presents different techniques to estimate them, and shows how phylogenetic trees form the basis for understanding a wide range of phenomena in Biology, such as ecological adaptation, disease spread or tumor evolution. Prerequisite: BIOL 202. Annually.

BIOL 254 Evolution 3.0; 3 cr.
A study of the processes that bring about evolutionary changes in organisms, evolutionary trends, patterns of adaptations, and principal factors that influence the patterns of speciation. Prerequisite: BIOL 201. Annually.

BIOL 255 Marine Ecology 3.0; 3 cr.
An introduction to the ecology of marine and brackish water ecosystems, structures and processes, with special attention to the eastern Mediterranean Sea. Interrelationships among animals, plants, and chemical and physical aspects of the environment are studied, as well as the unique adaptations for survival in these habitats. Prerequisite: BIOL 200 or BIOL 202. Occasionally.

BIOL 256 Conservation Biology 3.0; 3 cr.
A course that deals with various environmental issues in the world today; introduces the science of conservation; and describes typical methods of conservation. Students are trained in reading scientific literature and scientific writing, and are required to research a conservation topic. Prerequisite: BIOL 200 or BIOL 202. Annually.

BIOL 257 Ecology and Evolution 3.0; 3 cr.
An introduction to the basic principles, concepts and processes in ecology and evolution with a brief history of life on Earth and the relationships of these principles and concepts to current environmental issues such as pollution, climate change and biodiversity and its conservation. Animal behavior will be approached from the ecological and evolutionary perspectives. Students who have taken BIOL 252 or BIOL 254 cannot get credit for BIOL 257. Occasionally.

BIOL 258 Introduction to Aquaculture 3.0; 3 cr.
An introduction to the general concepts of aquaculture. The course discusses topics such as culture species, culture methods, water quality, filtration, feeding, and harvesting. It also introduces uses of aquaculture for food production, biomedical research, ornamentals, or restocking programs. Pre- or corequisite: BIOL 200 or BIOL 202. Occasionally.

BIOL 258L Aquaculture Laboratory 0.3; 1 cr.
This is an intensive writing course that introduces students to the practical side of aquaculture. Students will get their hands wet. They will set up fish maintenance systems, evaluate progressive changes in water chemistry, evaluate effects of water chemistry on fish health, and most importantly learn techniques used to maintain fish in healthy and sustainable environments. Students will be expected to keep a detailed log of their activities and perform a full-fledged research project that is expected to be written as a scientific publication. Pre- or corequisite: BIOL 258. Annually.

BIOL 259 Microbes and the Environment 3.0; 3 cr.
A course that explores the various habitats of micro-organisms in nature and the interactions within. The course discusses microbial metabolic activities and their impact on the environment. It explores the role of microbes as pathogens, particularly environmentally transmitted ones. The course also discusses the beneficial role of microbes in the biodegradation of pollutants, in addition to public health topics in microbiology. The course includes a substantial component of reading and analysis of primary research papers in environmental microbiology, in addition to presenting a poster session. Prerequisite: BIOL 202. Occasionally.

BIOL 260 Cell Biology 3.3; 4 cr.
A course that provides an understanding of the structure and function of cellular organelles and components, and the functional interaction of the cell with its microenvironment. Prerequisite: BIOL 223. Every term.

BIOL 261 Biology of Cancer 3.0; 3 cr.
This course compares the basic biology of normal versus the malignant neoplastic state and provides a comprehensive overview of the basic biology of cancer. Prerequisite: BIOL 223. Annually.

BIOL 262 Virology 3.0; 3 cr.
A general overview on the classification, biophysical, and biochemical characteristics of DNA- and RNA- containing bacterial, plant, and animal viruses. Prerequisite: BIOL 202. Occasionally.

BIOL 263 Immunology 3.0; 3 cr.
An introduction to basic immunology, types of immune responses, and basic aspects of the specific and non-specific body defense mechanisms, as well as primary immunological diseases and disorders. Prerequisite: BIOL 202. Annually.

BIOL 266 Oceanography 3.0; 3 cr.
An introduction to the basic concepts of oceanography and marine science. The course focuses on the chemical, physical, and geological processes that affect life in the oceans and on planet earth in general. The course discusses additional topics such as environmental science, conservation, world fisheries, marine resources, and effects of coastal development on life in the oceans. Annually.

BIOL 266L Oceanography Lab 0.3; 1 cr.
This is an intensive writing course that introduces students to the basic concepts of marine science applications. It introduces methods to study chemical, physical, biological and geological processes that affect life in the oceans and on planet earth in general. Methods of research used by oceanographers past and present are introduced and demonstrated. Students will be expected to keep a detailed log of their activities and perform a full-fledged research project that is expected to be written as a scientific publication. Annually.

BIOL 268 Introduction to Biotechnology 3.0; 3 cr.
An introduction of both the principles and the applications of molecular biology methods with an emphasis on the application of recombinant DNA technology to animals, plants, and microbial organisms. This course describes the use of genetically engineered products to solve environmental problems and cure human diseases. Annually.

BIOL 270 Plant Physiology 3.3; 4 cr.
A study of the vital processes that occur in flowering plants, including biophysical and metabolic processes, with emphasis on photosynthesis, growth, and development. This course also deals with plant responses to the physical environment. Prerequisite: BIOL 220. Every term.

BIOL 273 Economic Plants 3.0; 3 cr.
The course consists of the study of the relationship between people and plants. It encompasses the fields of botany, systematic, evolution, anatomy and anthropology. It explores the countless ways humans employ plants for food, medicine, textiles, shelter and more. Prerequisite: BIOL 202. Every term.

BIOL 280 Endocrinology 3.0; 3 cr.
A study of the role of chemical messengers in the control of physiological and metabolic processes. This course deals with the biosynthesis, chemistry, and secretion of hormones, as well as their mechanism of action. Prerequisite: BIOL 202. Occasionally.

BIOL 281 Ichthyology 3.0; 3 cr.
A study of the different types of fish, their natural history, and environmental and ecological adaptations. It also deals with methods of conserving and culturing fish of economic value, as well as the effect of pollution on fish fauna. Prerequisite: BIOL 202. Annually.

BIOL 283 Reproductive Physiology 3.0; 3 cr.
An examination of the mechanisms of all major aspects of male and female mammalian reproductive physiology. Emphasis is also given to species variation with regard to reproductive function and to a detailed examination of key reproductive events in both sexes. Prerequisite: BIOL 202. Occasionally.

BIOL 284 Developmental Biology 3.3; 4 cr.
A study of basic mechanisms and molecular basis that controls embryonic development in both vertebrates and invertebrates with special emphasis on early development and axis formation. Animal models covered include chicken, frog, mouse, drosophila, sea urchin, C. elegans and zebrafish. Prerequisite: BIOL 202. Annually.

BIOL 286 Entomology 3.3; 4 cr.
An introduction to the study of insects, their diversity, classification, morphology, biology, and behavior as well as their medical, ecological, and agricultural importance. Prerequisite: BIOL 202. Annually.

BIOL 290 Special Topics in Biology 1.0-4.0; 1-4 cr.
The course covers topics in biology that warrant an extensive coverage in a separate course not typically offered by the department. May be repeated for credit. Every term.

BIOL 291 Undergraduate Tutorial 2 cr.
Prerequisites: Senior standing, a minimum average of 3.2 (or 80) in the major, and consent of instructor. Graded Pass/ No Pass (or Fail). Every term.

BIOL 292 Undergraduate Tutorial 3 cr.
Prerequisites: Senior standing, a minimum average of 3.2 (or 80) in the major, and consent of instructor. Graded Pass/ No Pass (or Fail). Every term.

BIOL 293 Undergraduate Seminar 1.0; 1 cr.
Prerequisite: Senior standing. Every term.

BIOL 295 Summer Undergraduate Research 3.3; 4 cr.
A course intended to train and recruit well-prepared students for graduate work in biology at AUB. Students will conduct a research project during the summer term, and then present and defend their findings. Prerequisites: Completion of 80/120 credits, a minimum average of 2.7 (or 75) in the major, consent of instructor and approval of the department. Every summer.

BIOL 296 Exit Survey 0 cr.
A computer-based exit exam taken in the last term in the BS in Biology program. Prerequisite: Completion of graduation requirements for BS in Biology by the end of term. Graded Pass/ No Pass (or Fail). Every Spring.

37 Credits in Biology[1]

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (6)**	**Understanding the World (37 + 15), Quantitative Reasoning (3)**	**Community-Engaged Learning**
Lecture Courses (9+12+6+ 30+12+3)	Required Arabic course (3) Required English courses: ENGL 203 (3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required (6)	Required biology (23): BIOL 201(4), 202(4), 223(4), 220(3), and two from the following four courses: 224(4), 260(4), 270(4), 252(4) Elective biology (12+1 lab): a total of 13 credits, including a minimum of one 4-credit course Required chemistry (9): CHEM 201(3), 211(3), 212(3) Required physics (3): PHYS 204 or PHYS 205 Required: STAT 210 (3) or STAT 231 (3)	required (3)
Seminar (1)				Required: BIOL 293(1)	
Laboratory (5+1+2+1)				Required biology[2] (5): BIOL 201(4), 202(4), 223(4), and two from the following four courses: BIOL 224(4), 252(4), 260(4), 270(4)	

				Elective biology[3] (1) 1: minimum of one 4-credit course Required chemistry (2): CHEM 210(2) Required physics (1): PHYS 204L(1) or 205L (1)	
Research Project (0, 2, or 3)				Elective biology courses (2–3): BIOL 291(2 or 3)	
Exit Survey (0)				Required: BIOL 296 (0)	

1) Plus 8 free elective credits (MATH 203 and MATH 204 cannot be taken for credit by biology majors).
2) At least 37 credits in Biology and 15 credits in the sciences
3) These courses include a 1-credit laboratory component and have been listed under both lecture and laboratory courses.

Department of Chemistry

Chairperson:	El Rassy, Houssam T.
Professors:	Al-Ghoul, Mazen H.; Bouhadir, Kamal H.; El Rassy, Houssam T.; Ghaddar, Tarek H.; Ghauch, Antoine R.; Halaoui, Lara I.; Hasanayn, Faraj A.; Kaafarani, Bilal R.; Patra, Digambara J.; Sultan, Rabih F.
Associate Professors:	Hmadeh, Mohamad A.; Karam, Pierre M.
Instructors:	Abi Rafii, Randa A.; Deeb, Hana H.; Sadek, Samar A.

BS in Chemistry

Mission Statement

The Chemistry Department provides liberal arts and professional education in chemistry. The undergraduate program at the department is dedicated to teaching, scholarship, research and creative endeavors. Through this program, the department delivers a strong theoretical course of study and practical training in the chemical sciences to assure the success of its students in graduate schools, professional schools and employment. Undergraduate students are able to explain the essential facts, principles and theories across the four major areas of chemistry, i.e. analytical, organic, inorganic and physical. In addition, they are strongly encouraged to be engaged in research in these aforementioned areas. The program also plays a central role in the education of students of other majors, including students of Medicine, Health Sciences, Engineering, and Agriculture. Students accepted as chemistry majors must maintain an average of 2.3 or above in their first three terms in major courses in order to remain in the program. Students must complete the following minimum requirements: CHEM 201, CHEM 201L, CHEM 211, CHEM 212, CHEM 215, CHEM 216, CHEM 217, CHEM 218, CHEM 220, CHEM 225, CHEM 228, CHEM 229, and CHEM 230, at least two elective courses of the following five courses: CHEM 231, CHEM 232, CHEM 233, CHEM 234 and BIOL 220, in addition to MATH 201, MATH 202, and CMPS 201 or CMPS 203 or CMPS 209, PHYS 211 and PHYS 211L, 6 credits in the Societies and Individuals, and 12 credits in the Cultures and Histories. It is highly recommended that chemistry majors complete MATH 201 and MATH 202 before taking CHEM 217 and CHEM 218.

The 90-credit requirement for a BS degree in Chemistry is distributed as follows:

Degree Requirements

- Major courses: 40 credits in Chemistry courses (33 credits as required courses, 6 credits as elective courses, and 1 credit as a required seminar course)
- Courses from outside the department: 6 credits of Math and 1 credit of Physics
- Understanding the World courses: 3 credits of Physics
- Quantitative Reasoning courses: 3 credits of CMPS
- University General Education requirements that include 6 credits in Understanding Communication - English, 3 credits in Understanding Communication - Arabic, 9 credits in Cultures and Histories, 3 credits in

Community-engaged Learning, 3 credits in Human Values, and 6 credits in Societies and Individuals. At least one of the courses from Cultures and Histories or Human Values should be from the History of ideas: CHLA.
- Elective courses: 7 credits in free electives
- At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Freshman students who intend to major in chemistry should complete the following minimum requirements: CHEM 101, CHEM 101L, CHEM 102, CHEM 102L, MATH 101 and MATH 102, PHYS 101 and PHYS 101L.

Students who intend to minor in chemistry should complete the following requirements:

- CHEM 201, one lab course from the following list (CHEM 201L, CHEM 203, CHEM 209 or CHEM 210) and a minimum of 12 credits from courses selected from at least three of the below four chemistry divisions:
  - Analytical: CHEM 215, CHEM 219, CHEM 234
  - Inorganic: CHEM 228, CHEM 229
  - Organic: CHEM 207, CHEM 208, CHEM 211, CHEM 212
  - Physical: CHEM 217, CHEM 218, PHYS 212, [CHEM 204 and MECH 310]
- Typical choice of minors for different majors:
  - Biology: CHEM 201, CHEM 201L/210, CHEM 211, CHEM 212, CHEM 215, CHEM 228 (16/17 credits)
  - Physics: CHEM 201, CHEM 201L/209/210, PHYS 212, CHEM 215/217, CHEM 208/211/212/228 (16/17 credits)
  - Geology: CHEM 201, CHEM 201L/209, CHEM 208, CHEM 215, CHEM 228, CHEM 229 (16/17 credits)
  - Chemical Engineering: CHEM 201, CHEM 201L/209, CHEM 207, CHEM 219, (CHEM 204 and MECH 310) (16/17 credits)
- For a premedical chemistry student, the core premedical chemistry courses are: CHEM 101 + CHEM 101L (or equivalent), CHEM 201, CHEM 211, CHEM 212, and CHEM 225. The biology premedical courses are BIOL 101 (or equivalent) and BIOL 200 or BIOL 201. The physics requirements for a premedical chemistry student are PHYS 211 and PHYS 211L.
- The premedical chemistry core courses for non-chemistry major premedical students are: CHEM 101 + CHEM 101L (or equivalent), CHEM 201, CHEM 210, CHEM 211, and CHEM 212.

Course Descriptions

CHEM 101 General Chemistry I 3.0; 3 cr.

An introductory course that covers atomic structure, chemical reactions, stoichiometry, gas laws, thermochemistry, periodic relationships among the elements, chemical bonding, and other basic concepts. Every term.

CHEM 101L General Chemistry Laboratory I 1.3; 1 cr.

A laboratory course to accompany CHEM 101. The experiments explore some of the fundamental concepts which deal with measurements, percent composition, chemical reactions, stoichiometry, volumetric analysis, gas laws, and calorimetry. Pre- or corequisite CHEM 101. Every term.

CHEM 102 General Chemistry II 3.0; 3 cr.

A course that covers solutions, chemical equilibrium, kinetics, acid-base and solubility equilibria, introductory thermodynamics and electrochemistry; surveys common groups in the periodic table; provides an introduction to organic chemistry and nuclear chemistry. Prerequisite: CHEM 101. Every term.

CHEM 102L General Chemistry Laboratory II 1.3; 1 cr.

A laboratory course to accompany CHEM 102. The experiments explore some of the fundamental concepts which deal with physical properties of solutions, chemical equilibrium, acids and bases, solubility equilibria, kinetics and electrochemistry. Prerequisite: CHEM 101L. Pre- or corequisite: CHEM 102. Every term.

CHEM 200 Basic Chemistry and Applications 3.0; 3 cr.

Introduces basic chemical principles and concepts and uses them to discuss selected contemporary applications and problems from the areas of materials, environmental, medicinal or biological chemistry. Introductory topics include the electronic structure of the atom, bonding and molecular geometry, stoichiometry, and reaction energies. Selection of modern applications in Chemistry. Students cannot receive credit for both CHEM 200 and CHEM 201. Every term.

CHEM 201 Chemical Principles 3.0; 3 cr.

A theoretical introduction to chemical principles, stressing atomic structure, bonding, stoichiometry, gases, solutions, acids and bases, solution equilibria. Students cannot receive credit for both CHEM 200 and CHEM 201. Prerequisite: CHEM 101 and CHEM 101L or its equivalent. Every term.

CHEM 201L Introduction to Chemical Analysis Laboratory 1.3; 1 cr.

Introduces students to chemical analysis in a series of preparatory laboratory experiments. Students acquire knowledge in handling basic tools and equipment, conduct wet chemistry experiments and quantify aqueous solutes using simple laboratory devices. Students can receive credit for only one of CHEM 201L, CHEM 209, CHEM 210. Pre - or corequisite: CHEM 201. Every term.

CHEM 202 Introduction to Environmental Chemistry 3.0; 3 cr.

An introduction to the fundamentals of physical, inorganic, and organic chemistry, with applications to environmental problems. This course surveys atomic and molecular structure, solutions, equilibrium, acids and bases, oxidation-reduction, reaction kinetics with emphasis on mechanisms of organic free radical reactions, and basic radioactivity. Students can receive credit for CHEM 201 and CHEM 202. Prerequisites: CHEM 101 and CHEM 101L or equivalent. Every term.

CHEM 203 Introductory Chemical Techniques 1.3; 2 cr.

A laboratory course on the methods of quantitative analysis, physical chemistry measurements, and inorganic semi-micro qualitative analysis, with applications to environmental problems. Not open to chemistry majors. Pre- or corequisite: CHEM 200, CHEM 201, or CHEM 202. Annually.

CHEM 204 Physical Chemistry for Chemical Engineers 2.0; 2 cr.

An introduction to the basic principles of chemical kinetics, surface phenomena and colloids: reaction rates and mechanism; theories of reaction rates; catalysis; photochemistry; colloids; adsorption on surfaces; surface analytical techniques. Not open to chemistry students. Prerequisites: CHEM 102 and CHEM 102L. Every summer.

CHEM 205 Introductory Chemistry Laboratory 1.4; 2 cr.

A laboratory course on the methods of quantitative analysis, physical chemistry measurements, and inorganic semi-micro qualitative analysis. Not open to chemistry majors. Pre- or corequisites: CHEM 200, CHEM 201, or CHEM 202. Every term.

CHEM 206 Quantitative Analysis 3.4; 4 cr.

A course that covers gravimetric and volumetric techniques; acid/base, complex formation, and redox titrations; electrochemistry and an introduction to chromatography and spectrophotometric analysis. This course is designed for biology majors. Not open to chemistry majors. Students cannot receive credit for both CHEM 206 and CHEM 215-216. Prerequisite: CHEM 201. Occasionally.

CHEM 207 Survey of Organic Chemistry and Petrochemicals 3.3; 4 cr.

A survey of organic chemistry which mainly covers properties and reactions of aliphatic and aromatic hydrocarbons, functional groups, including alkyl halides, alcohols and ethers, aldehydes and ketones, carboxylic acids and derivatives. This course surveys polymers, petrochemicals and their general use in industry. The laboratory component covers the basic organic lab skills such as recrystallization, distillation, extraction, chromatography and some synthesis experiments. Designed for chemical engineering students. Students cannot receive credits for both CHEM 208 and CHEM 207; CHEM 211 and CHEM 207. Prerequisite: CHEM 102 or equivalent. Annually.

CHEM 208 Brief Survey of Organic Chemistry 3.0; 3 cr.

A brief survey designed for students majoring in agriculture or public health that covers the following topics: hydrocarbons, stereoisomerism, organo halogens, oxygen containing groups, carbonyl groups, carboxylic acids and their derivatives, amines, carbohydrates, and amino-acids. Students cannot receive credit for both CHEM 208 and CHEM 211. Prerequisites: CHEM 101 and CHEM 101L; or CHEM 200 or equivalent. Every term.

CHEM 209 Introductory Organic Laboratory 1.3; 2 cr.

A course of basic experiments in organic chemistry, including synthesis and techniques of separation and purification of organic compounds. Students can receive credit for only one of CHEM 201L, CHEM 209, CHEM 210. Pre- or corequisite: CHEM 208. Every term.

CHEM 210 Organic Laboratory for Non-Majors 1.4; 2 cr.

Basic experimental techniques in organic analytical chemistry (melting and boiling point, chromatography, distillation, extraction, recrystallization), performing reactions in synthetic organic chemistry. Students can receive credit for only one of CHEM 201L, CHEM 209, CHEM 210. Pre- or corequisite: CHEM 212. Every term.

CHEM 211 Organic Chemistry I 3.0; 3 cr.

An introduction to organic chemistry organized according to functional groups. This course covers synthesis, properties, and reactions of aliphatic and aromatic hydrocarbons and alkyl halides, with emphasis on mechanistic and stereochemical aspects of organic reactions. Designed for chemistry majors and premedical study. Students cannot receive credit for both CHEM 208 and CHEM 211. Prerequisite: CHEM 201. Every term.

CHEM 212 Organic Chemistry II 3.0; 3 cr.

A course that covers synthesis, properties, and reactions of organic functional groups, including alcohols and ethers, aldehydes and ketones, carboxylic acids and derivatives, amines, phenols, and aryl halides; chemistry of difunctional compounds and of molecules of biological importance, including carbohydrates, proteins, and nucleic acids; and organic structure determination by spectroscopic methods. Emphasis is placed on reaction mechanism and stereochemistry, as well as on the design of multi-step syntheses. Designed for chemistry majors and premedical study. Prerequisite: CHEM 211. Every term.

CHEM 215 Analytical Chemistry 3.0; 3 cr.

A course that covers fundamental analytical processes, including solution equilibria, titrations, electrochemical theory and applications, chromatography and spectrophotometric techniques. Students cannot receive credit for both CHEM 215 and CHEM 206. Prerequisite: CHEM 201. Every term.

CHEM 216 Analytical Chemistry Laboratory 1.4; 2 cr.

Experimental work in related areas of chemical analysis and instrumentation including: complexometric analysis; ion-selective electrodes; spectrophotometric analysis; molecular spectroscopy; atomic spectroscopy; liquid chromatography; ion chromatography, gas chromatography, calibration methods (standard addition method and internal standard method), data analysis using statistical methods with uncertainty determination, multicomponent analysis. Prerequisite: CHEM 201L. Pre- or corequisite: CHEM 215. Every term.

CHEM 217 Thermodynamics and Chemical Dynamics 3.0; 3 cr.

A course that covers the basic principles of chemical thermodynamics and chemical dynamics; mathematical machinery of the laws of thermodynamics; heat, work and energy; first, second and third laws of thermodynamics; thermodynamics of chemical reactions, phase transformations and phase equilibria; thermodynamics of solutions; transport properties: diffusion, viscosity, ion transport, thermal conductivity; chemical kinetics and reaction mechanisms. Pre- or corequisite: MATH 202. Prerequisite: CHEM 201. Annually.

CHEM 218 Quantum Chemistry 3.0; 3 cr.

A course that covers failures of classical physics, quantum theory, Schrödinger equation, particle in a box, harmonic oscillator, rotational motion, hydrogen atom, atomic orbitals, spin, Pauli exclusion principle, complex atoms, term symbols, molecular structure, hybridization, Hückel theory, rotation, vibration, and electronic spectra. Students cannot receive credit for both PHYS 212 and CHEM 218. Pre- or corequisite: MATH 202. Prerequisite: CHEM 201. Annually.

CHEM 219 Analytical and Instrumental Chemistry for Chemical Engineers 3.0; 3 cr.

An introduction to chemical measurements and modern instrumental methods of chemical analysis: sample preparation; error analysis; chemical separations; chromatographic; spectroscopic; electrochemical, and surface analysis techniques. Not open to chemistry students. Prerequisites: CHEM 102 and CHEM 102L. Annually.

CHEM 220 Physical Chemistry Laboratory 1.6; 3 cr.

Experiments in thermodynamics, kinetics, electrochemistry, spectroscopy, and exercise in computational chemistry. Prerequisites: CHEM 201L and CHEM 217. Pre- or corequisite: CHEM 218. Annually.

CHEM 225 Organic Structure Determination 1.6; 3 cr.

Experiments in the techniques of purification, separation, and synthesis of derivatives of organic compounds; theory and practice in the analysis of organic compounds by infrared, ultraviolet-visible spectrophotometry, mass spectrometry, and nuclear magnetic resonance; identification of pure compounds and of components of mixtures of organic compounds by chemical and spectral methods. Prerequisites: CHEM 201L and CHEM 212. Annually.

CHEM 228 Inorganic Chemistry 3.0; 3 cr.

A course that covers atomic structure, molecular structure (VBT, MOT), molecular shape (VSEPR), symmetry and group theory, the structure of solids (metals, ionic), acids and bases (Brønsted, Lewis, HSAB, solvents). Prerequisite: CHEM 201. Annually.

CHEM 229 Coordination Compounds 3.0; 3 cr.

A course that covers d-metal complexes (structures and symmetries, bonding and electronic structure, reactions of complexes); electronic spectra of complexes; reaction mechanisms of d-block complexes (ligand substitution reactions in square-planar and octahedral complexes, redox reactions, photochemical reactions). Prerequisite: CHEM 228. Annually.

CHEM 230 Senior Seminar 1.0; 1 cr.

A literature search of a specific topic in chemistry. A written report and oral presentation in a seminar form. Prerequisite: Senior standing. Every term.

CHEM 231 Organic Synthesis 1.4; 3 cr.

Experiments in multistep synthesis of organic compounds, with an emphasis on methods used for synthesis and isolation, and characterization of intermediates and products. Prerequisite: CHEM 201L. Pre- or corequisite: CHEM 212. Annually.

CHEM 232 Inorganic Synthesis 1.4; 3 cr.

Experiments in synthesis, separation, purification, and characterization of inorganic main-group and transition metal compounds by IR, UV-Vis, NMR, and ESR spectroscopy. Prerequisite CHEM 201L. Pre- or co-requisite CHEM 229. Annually.

CHEM 233 Topics in Physical Chemistry 3.0; 3 cr.

A course that covers a selection of topics in thermodynamics, advanced kinetics, and techniques in physical analysis; thermodynamics of phase transformation; theoretical and experimental aspects of rates of reactions; rate laws of complex reactions, catalysis, adsorption isotherms, spectroscopic techniques (e.g., laser spectroscopy, NMR, EPR); surface analysis and imaging techniques; X-ray crystallography. Prerequisite: CHEM 217. Pre- or corequisite: CHEM 218. Annually.

CHEM 234 Instrumental Analytical Chemistry 3.0; 3 cr.

A course that provides students with a solid knowledge in the chemistry of separation and identification. It introduces chemistry students to many analytical techniques and instruments that are widely used in different laboratories in the fields of chemistry, chemical engineering, environmental health, biochemistry, forensic science, toxicology, industrial hygiene, medicine, pharmacology, pharmacy, geology, agriculture, and other industrial applications. It includes chemometry and detailed description of sample preparation techniques; electroanalytical techniques (potentiometry, electrogravimetry, coulometry and voltammetry); spectroscopic methods (components of optical instruments, optical atomic spectrometry, atomic absorption and atomic fluorescence spectrometry, atomic emission spectrometry, molecular luminescence spectrometry); separation methods (liquid, gas, supercritical-fluid, chiral and capillary electrophoresis chromatography) and related hyphenated (coupled) techniques (GC/ MS, HPLC/APCI-APPI-ESI/MS). Prerequisite: CHEM 215. Pre- or corequisite: CHEM 216. Annually.

CHEM 295 Special Topics in Chemistry 3.0; 3 cr.
Prerequisite: Senior standing in Chemistry. Alternate years.

CHEM 299 Independent Study 3.0; 3 cr.
Independent chemical research carried out under the direction of a faculty member, including presentation of the results in the form of a senior thesis. Offered to senior students in good standing, by arrangement with the project director. Every term.

34 + 6 Credits in Chemistry

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (6)**	**Understanding the World (44 - 47), Quantitative Reasoning (3)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+6+ 47+9+3)	Required Arabic course (3) Required English courses: ENGL 203 (3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required (6)	Core: CHEM 201(3), 211(3), 212(3), 215(3), 217(3), 218(3), 228(3), 229(3) Electives: CHEM 233(3), CHEM 234(3), BIOL 220(3) Science courses (12): PHYS 211(3), MATH 201(3), MATH 202(3), CMPS 201 or 203 or 209(3)	Required course (3)
Seminar (1)				CHEM 230(1)	

Laboratory (13–19)				Computer Science (3): CMPS 201 or 203 or 209(3) Chemistry courses (9–15) Core: CHEM 201L(1), CHEM 216(2), 220(3), 225(3) Electives2: CHEM 231(3), 232(3) Science courses (1): PHYS 211L	
Research Project (0 or 3)				CHEM 299(3)	

Critical Humanities for the Liberal Arts (CHLA)

Director:	Bou Ali, Nadia
Professors:	Hout, Syrine S.; Jarrar, Maher Z.
Associate Professors:	Bou Ali, Nadia; Goodfield, Eric
Assistant Professors:	Gonzalez, Maya Andrea; Middlemiss Sanazaro, Marie Claire
Senior Lecturer	Harb, Sirene
Lecturers:	Bizri, Rana; Bualuan, Hayat H.; Ekmekji, Arda; El Amm, Charbel; Hassan, Hani R.; Korangy, Alireza; Kozah, Mario
Instructors:	Arasoghli, Aida A.; Hariri, Muhannad
Visiting Instructors:	Yu, Fen; Wieland, Klaus

The Critical Humanities for the Liberal Arts Program (CHLA) at the American University of Beirut is a unique, interdisciplinary space for critical inquiry into ideas that inform civilization.

Mission Statement

The mission of CHLA is to provide undergraduate courses in the humanities that support the American University of Beirut's goals in general education and the advancement of knowledge. CHLA is committed to engaging students from all the faculties of the university in the study of the liberal arts. The program is interdisciplinary in nature. Its mission is to study the history of ideas; introduce students to primary texts; develop critical thought in the humanities; instill an awareness of global and contemporary concerns and foster humanistic knowledge.

Requirements

According to the General Education requirements at AUB, all students are required to take a total of 9 credits in the Cultures and Histories and 3 credits in Human Values.

A minimum of 3 credits of those 12 must be taken from CHLA courses. Students can choose a course that is most compatible with their area of specialization and interests.

All CHLA courses are included among the General Education courses, all courses fulfill the designation 'Cultures and Histories'. In addition to fulfilling the 'Cultures and Histories' GE designation, CHLA 210 fulfills the 'Social Inequalities' designation, and CHLA 214 fulfills the 'Human Values' designation.

All CHLA 210-214 courses count as both Sequence I and Sequence II for students admitted before Fall 2023-24

Sequence I

- CHLA 201 (every term): Ancient Near East and Classical Civilizations (3 cr.)
- CHLA 202 (every term): Medieval, Islamic, and Renaissance Civilizations (3 cr.)
- CHLA 205 (every term): Ancient, Medieval, Islamic, and Renaissance Civilizations (3 cr.)

Sequence II

- CHLA 203 (every term): Enlightenment and Modernity (3 cr.)
- CHLA 204 (every term): Contemporary Studies (3 cr.)
- CHLA 206 (annually): Modern and Contemporary Studies (3 cr.)

The following CHLA courses are not included among the General Education Cultures and Histories courses: FREN 201, FREN 202, GERM 201, GERM 202, CHIN 201, CHIN 202, CHIN 203.

Explanation

Students are required to take a Sequence I course before taking a Sequence II course. This is because acquaintance with basic intellectual elements from the epochs covered in Sequence I courses will help students in understanding elements covered in Sequence II. Moreover, successfully completing a Sequence I course allows students to take any other CHLA course. Students must have sophomore status or above to take a Sequence I course and junior status to take a Sequence II course. Sequence I and Sequence II courses may not be taken simultaneously unless a Sequence I course has already been completed.

Restrictions

- CHLA 205 overlaps with 201 and 202. Thus, CHLA 205 cannot be taken if the student has taken either 201 or 202, and vice versa.
- CHLA 206 overlaps with 203 and 204. Thus, CHLA 206 cannot be taken if the student has taken either 203 or 204, and vice versa.

Prerequisites

- ENGL 102 or its equivalent is a prerequisite for all CHLA courses numbered 200 and above. ENGL 203 is a co-requisite for all CHLA courses numbered 200 and above.
- Students in the Freshman class may not enroll in CHLA courses numbered 201–206. For all other CHLA courses numbered 200 and above, freshman students may only enroll after the consent of the course instructor.

Minor in Critical Humanities

A minor in critical humanities requires 15 credits: CHLA 204 or CHLA 206, CHLA 209, and three courses chosen from CHLA 210-214

Sequence I and Sequence II Course Offerings

CHLA 201 Ancient Near East and Classical Civilizations 3.0; 3 cr.

An introduction to fundamental elements of Ancient Mesopotamian, Greek, and Roman world views that continue to influence us today. Starting with the Epic of Gilgamesh, the course moves on to explore the Greek and Roman worlds through epic, drama, history, and philosophy, in some of the most influential texts from that period of human history. CHLA 201 cannot be taken if the student has taken CHLA 205. Every term. Previously CVSP 201.

CHLA 202 Medieval, Islamic, and Renaissance Civilizations 3.0; 3 cr.

An introduction to fundamental elements of late Classical, Medieval, Islamic, and Renaissance worldviews that continue to influence us today. This course focuses particularly on Christian and Islamic thought as presented in texts such as those of Augustine, Al Ghazali, Ibn Tufayl, Ibn Rushd, Aquinas, Dante, Ibn Khaldun, and Luther. Selected texts from the Renaissance period round off the course. CHLA 202 cannot be taken if the student has taken CHLA 205.Every term. Previously CVSP 202.

CHLA 203 Crossroads of Modern Thought 3.0; 3 cr.

An introduction to fundamental elements of the Enlightenment and Modernity. The course engages texts expressing contrasting views of the same topic paired into thematic blocks: Introduction, The Scientific Revolution, State and Social Contact, Enlightenment and its Critics, Modernity Beyond Enlightenment. CHLA 203 cannot be taken if the student has taken CHLA 206. Prerequisite: Any Sequence I course. Every term. Previously CVSP 203.

CHLA 204 Contemporary Studies 3.0; 3 cr.

An introduction to some of the most seminal influences in thought that have shaped our contemporary world from the late 19th century to the present time. This course typically explores themes and developments such as evolutionary theory, Nietzschean radical critique, depth-psychology, astrophysics, philosophy of science, revolution, the absurd, existentialism, gender issues, and postcolonial literature and criticism, from both the Western and the Arab worlds. CHLA 204 cannot be taken if the student has taken CHLA 206. Prerequisite: Any Sequence I course. Every term. Previously CVSP 204.

CHLA 205 Ancient, Medieval, and Renaissance Civilizations 3.0; 3 cr.

A composite of CHLA 201 and 202, covering selected works from the periods described above. CHLA 205 cannot be taken if the student has taken either CHLA 201 or CHLA 202. Every term. Previously CVSP 205.

CHLA 206 Modern and Contemporary Studies 3.0; 3 cr.

A composite of CHLA 203 and 204, covering selected works from the periods described above. CHLA 206 cannot be taken if the student has taken either CHLA 203 or CHLA 204. Prerequisite: Any Sequence I course. Occasionally. Previously CVSP 206.

Courses Restricted to Freshman Students

CHLA 110 Gods and Creation: East and West 3.0; 3 cr.

A course that examines different literary understandings of the origins of the universe as found in texts from a variety of world cultures. Annually. Previously CVSP 110.

CHLA 111 Youth and Rebellion in Modern Literature 3.0; 3 cr.

An introduction to the themes and challenges of autonomy and independence as experienced by youth, studied through major literary works of the past centuries. Annually. Previously CVSP 111.

CHLA 112 Contemporary Arab Identity 3.0; 3 cr.

An examination of literary, historical, and socio-political texts that express contemporary Arab self-awareness. Annually. Previously CVSP 112.

Courses Supplementary to the Regular Offerings

CHLA 209 (A, B, C, D, E...) Theories and Methods 3.0; 3 cr.

This course is an introduction to the fundamental questions studied by the critical humanities. It aims to introduce undergraduates to major critical theories of modernity and the contemporary. The course aims to develop foundational skills for other CHLA courses such as textual interpretation and critical analysis. The course covers the following themes but is not restricted to them: modernity, postmodernity, ideology, fetishism.

CHLA 210 (A, B, C, D, E...) Social Inequalities (gender, race, class) 3.0; 3 cr.

These courses aim to raise students' critical awareness of social inequalities through a tripartite division: gender and sexuality, race, and class. Their aim is to familiarize students with how structures of inequality are produced through discourse and practice in a diverse set of historical contexts. Readings are interdisciplinary, covering but not restricted to the fields of social theory, anthropology, psychoanalysis, philosophy, political economy, the arts, literary studies and political theory amongst others.

CHLA 211 (A, B, C, D, E...) The Normal and the Pathological 3.0; 3 cr.

These courses aim to raise students' critical awareness of the assumed distinctions between health and sickness and the normal and the pathological. This distinction is approached in the following fields of inquiry but not restricted to them: 1) life systems or living organisms and the theory of evolution, where we observe the contingencies underlying adaptation, 2) human sexual health and sickness, where the distinction between normal and pathological does not hold, and 3) rational or reasonable thought, where the relation between madness and reason is explored in a non-relativistic manner.

CHLA 212 (A, B, C, D, E...) Science, Culture, and Society 3.0; 3 cr.

Course aims to raise students' critical awareness of the history of science, its intellectual framework, and the multifaceted impact it has had and continues to have on human life. In these courses students will read and analyze scientific, literary, and philosophical works that explore the ways in which science has changed, or should change, the way we understand ourselves and the world in which we live. The course will offer a historical background as well as engage in themes that are relevant to our contemporary world such as: automation, AI, technological advances in the worldwide web, etc.

CHLA 213 (A, B, C, D, E...) Nature and Society 3.0; 3 cr.
The environment in which we live and how we conceptualize it are integral parts of how we understand ourselves, each other, our projects, and the significance of human life. Courses under this designation aim to raise students' critical awareness of issues related to ecology by examining and comparing primary texts and media from different traditions - ancient, modern, and contemporary – in order to better understand the relationship between our conceptions of nature on the one side, and of human life and values on the other. Courses under this designation will cover one or more of the following divisions: nature in the age of myth, nature and the medieval world, nature and modernity, modern ecology. Under each division, students will read, analyse, and discuss texts or media chosen by the instructor from a list of approved resources.

CHLA 214 Human Values (A, B, C, D, E...) 3.0; 3 cr.
Courses aim to raise students' awareness of issues related to human values by asking questions such as: What is the value of values? What are they good for and why do they often contradict or align with one another? If values form an inevitable and often invisible lens through which we understand ourselves and the world, how can we come to understand them? They will question the structure and purpose of values as responses to conceptual and historical problems such as particularity and universality, the social and the natural, solidarity and individuality, freedom and obligation, tradition and futurity, self and other, or other themes within and between traditions. These courses introduce students to values in a variety of contexts and traditions and make selective use of ethical, literary, psychological, philosophical, scientific, historical, spiritual or other resources.

CHLA 261 Civilization Through the Arts I 3.0; 3 cr.
An introduction to the appreciation of art. More of a cultural history than an art historical survey, this course aims to provide the student with general knowledge about how the understanding of art, artist and beauty/the aesthetic has changed in time and place. Previously CVSP 250.

CHLA 262 Civilization Through the Arts II 3.0; 3 cr.
The course critically examines the terms 'modern' and 'art' and the association of modern art with Western art. It then focuses on non-Western modern art, taking Lebanon as an example. Previously CVSP 251.

CHLA 263 Modern and Contemporary World Theatre 3.0; 3 cr.
This course examines a number of plays from across different artistic, cultural and linguistic traditions. The focus will be on reading and analyzing these plays for an appreciation of aesthetic innovations, modes of theatrical expression, and their place within particular social or cultural contexts. Course materials may include filmed versions of the plays for comparison. Annually. Previously CVSP 212.

CHLA 270 Survey of Nineteenth-Century French Literature in English 3.0; 3 cr.
A survey of the major French poets and novelists of the nineteenth century with selected readings from Hugo, Lamartine, Baudelaire, and Rimbaud to Stendhal, Balzac and Zola. Annually. Previously CVSP 215.

CHLA 271 A Survey of Twentieth-Century French Literature in English 3.0; 3 cr.
A survey of the major French poets and novelists of the twentieth century with an emphasis on the main artistic currents from Proust, Colette, Gide, Sartre, and Camus, to surrealism in poetry and the New Novel by Robe-Grillet, Nathalie Sarraute, and Marguerite Duras. Annually. Previously CVSP 216.

CHLA 272 Modern Russian Literature 3.0; 3 cr.
Russian short stories, novels and plays have had a major impact on world literature. The course offers a close reading of texts from authors such as Gogol, Dostoyevsky, Tolstoy, Chekov, Gorky and Solzhenitsyn that reflect socio-political and psychological changes undergone in Russia from the nineteenth century to our own times. Previously CVSP 217.

CHLA 295 Special Topics in Cultural Studies 3.0; 3 cr.
At the discretion of the program. May be repeated for credit on different topics. Prerequisite: Junior level and above, or consent of instructor.

CHIN 201 Chinese I 3.0; 3 cr.
Every term.

CHIN 202 Chinese II 3.0; 3 cr.
Prerequisite: CHIN 201. Every term.

CHIN 203 Chinese III 3.0; 3 cr.
Prerequisite: CHIN 202.

FREN 201 Elementary French I 3.0; 3 cr.
Every term.

FREN 202 Elementary French II 3.0; 3 cr.
Every term.

FREN 211 Intermediate French 3.0; 3 cr.
Prerequisite: FREN 202.

GERM 201 Elementary German I 3.0; 3 cr.
Elementary German.

GERM 202 Elementary German II 3.0; 3 cr.
Prerequisite: GERM 201.

GERM 211 Intermediate German 3.0; 3 cr.
Prerequisite: GERM 202.

Department of Computer Science

Chairperson:	Safa, Haidar H.
Professors:	El-Hajj, Wassim; Safa, Haidar H.
Associate Professors:	Abu Salem, Fatima K.; Elbassuoni, Shady; Khabbaz, Maurice
Assistant Professors:	Assaf, Rida; El Hajj, Izzat; Mouawad, Amer
Senior Lecturer:	Jureidini, Wadi' N.
Lecturers:	Kobeissi, Mohamed A.; Raheel, Saeed
Instructors:	Aoude, Loa; Fatairi, Nour

The Department of Computer Science offers a program leading to the degree of Bachelor of Science (BS) in Computer Science. It also offers a program leading to the degree of Master of Science (MS) in Computer Science. For more information about the department visit https://www.aub.edu.lb/fas/cs/Pages/default.aspx

Mission Statement

The Department of Computer Science at the American University of Beirut prepares students for advanced studies and professional careers in the dynamically changing world of computing and information technology. Our programs combine the theoretical foundations of computing with the practical knowledge of software development vital to industry, to provide broad and integrated curriculums.

The department offers a Bachelor of Science (BS) degree in computer science, designed to be completed typically in three years after the freshman year. It also offers a Master of Science (MS) program designed to provide advanced and specialized education in computing, offered in formats that meet the needs of both working professionals and full-time students.

The department has vigorous research programs in theoretical computer science, systems, machine learning and data science, and software engineering. Our faculty members are committed to contributing to the advancement of the field of computing through scholarly activities, in which our students play a vital role.

BS in Computer Science

The BS program aims at imparting graduates with a solid foundation in computing at both the theoretical and practical levels, thus conferring the ability to design, build, and deploy sophisticated systems using state-of-the-art technologies in a broad array of areas. It also develops an appreciation of the transformative impact that computing has had on a wide variety of disciplines. Students are trained in quantitative reasoning, the use of fundamental principles and ideas (abstraction, modularity, data structures, algorithmics, computability, calculus, and logic) for analysis and problem solving, and disciplined development of modern software systems. The BS program adheres to ACM's (Association of Computing Machinery) standards for knowledge areas learning outcomes.

BS/MS in Computer Science

A study plan is presented that allows students to finish the requirements for the BS and MS degrees in four years (including summers) after the freshman year.

BE in Computer Science & Engineering (CSE)

AUB also offers a program in Computer Science and Engineering (CSE) leading to the degree of Bachelor of Engineering (BE). The BE in CSE is offered by the Department of Electrical & Computer Engineering in collaboration with the Department of Computer Science. Students who have completed the requirements for a BS in Computer Science have the option to transfer to the BE program in CSE, provided they achieve a qualifying overall GPA. Transferring students can finish the CSE degree in four calendar years, provided they follow an appropriate study plan.

Minor in Computer Science

A minor in computer science requires the completion of the following 18 credits: CMPS 201, CMPS 202, CMPS 211 (or MATH 211), CMPS 214, and 3 additional credits from the following: CMPS 215, CMPS 221, CMPS 231, CMPS 240, CMPS 241, and CMPS 271, and 3 additional credits from CMPS courses numbered 214 and above (except CMPS 297T). [Note: This minor is not open to students from the ECE Department.]

Minor in Computational Science

A minor in Computational Science requires the completion of the following 18 credits: 12 required credits (CMPS 201 or CMPS 203, CMPS 202, MATH/CMPS 251, MATH 281 or CMPS 254), 6 credits out of the following: MATH 211 (or CMPS 211), DCSN 200, PHYS 222, or a tutorial course in either PHYS 231 or PHYS 232, a course in bioinformatics, or a chemistry course which has computational contents.

Minor in Data Science

A minor in data science requires the completion of the following 18 credits: CMPS 201 or CMPS 203, CMPS 244, CMPS 261, CMPS 262, one of the following (STAT 201, STAT 210, STAT 230, STAT 233, BUSS 200, EDUC 227,ECON 213, or NURS 203), and MATH 218 or MATH 219. [Note: This minor is not open to Computer Science students and students from the ECE Department.

Minor in Software Development and Design

A minor in software development and design requires the completion of the following 18 credits: CMPS 201, CMPS 202, CMPS 244, and CMPS 271, and two of CMPS 270, CMPS 278, CMPS 279, and CMPS 288. [Note: This minor is not open to Computer Science students and students from the ECE Department.]

Minor in Gaming

The Gaming Minor can be attained by any AUB student who fulfills 18 credits which vary depending on the student's major. Humanities, creative arts, graphic design, and related majors must take the following 3 courses: CMPS 201 or CMPS 203, GRDS 141, CMPS 204. Science, engineering, math, and other STEM majors (including computer science) must take the following 3 courses: CMPS 202, CMPS 285, CMPS 288. All majors must take 2 out of the following courses: ENGL 264, ENGL 297, MCOM 291P. All majors must also take 1 out of the following courses: ENGL 254G, EDUC 275.

Degree Requirements

To graduate with a BS in computer science, a student must complete the following requirements:

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from the degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Major Requirements

- Computer science: CMPS 201, CMPS 202, CMPS 214, CMPS 215, CMPS 221, CMPS 240, CMPS 241, CMPS 271, and 18 additional credits in computer science courses numbered 214 and above (except CMPS 297T).
- Technical electives: Three credits to be chosen from the following: CMPS elective numbered 214 or above (except CMPS 297T), BIOL 251, ECON 214, ECON 217, FINA 210, MATH 210, MATH 261, MATH/STAT 234, MATH/STAT 238, PHYS 222, PHYS 228, PHYS 235, PSYC 222, PSYC 229.
- Mathematics: MATH 201, MATH 211 (or CMPS 211), MATH 218 (or MATH 219), and STAT 230 (or STAT 233).

All prospective computer science majors are expected to complete CMPS 201, MATH 201, MATH 211 or CMPS 211, MATH 218, CMPS 202, and STAT 230 in the sophomore year. Computer science majors are expected to complete CMPS 214, CMPS 221, CMPS 241, and CMPS 271 in the junior year, and CMPS 215, and CMPS 240 in the senior year, and maintain an average grade of at least 2.3 in computer science courses. Students must have a grade of at least C+ in CMPS 201, and a grade of at least C+ in CMPS 202 before they are allowed to enroll in most CMPS courses.

Sample Study Plan for BS

A typical study plan could have the following distribution of CMPS courses:

Students starting in the Fall term:

First Year

- Fall term: CMPS 201, CMPS 211, MATH 201
- Spring term: CMPS 202, MATH 218, STAT 230

Second Year

- Fall term: CMPS 214, CMPS 221, CMPS 241
- Spring term: CMPS elective, CMPS elective, CMPS 271

Third Year

- Fall term: CMPS 215, CMPS 240, CMPS elective
- Spring term: CMPS elective, CMPS elective, CMPS elective

Students starting in the Spring term:

First Year

- Spring term: CMPS 201, CMPS 211, MATH 201
- Fall term: CMPS 202, MATH 218, STAT 230

Second Year

- Spring term: CMPS 214, CMPS 221, CMPS elective
- Fall term: CMPS 241, CMPS 271, CMPS elective

Third Year

- Spring term: CMPS 215, CMPS elective, CMPS elective
- Fall term: CMPS 240, CMPS elective, CMPS elective

Sample Study Plan for BS/MS

First Year

- Fall: CMPS 201, CMPS 211, MATH 201
- Spring: CMPS 202, MATH 218, STAT 230
- Summer: CMPS 221

Second Year

- Fall: CMPS 214, CMPS 241, CMPS elective
- Spring: CMPS 215, CMPS 240, CMPS 271
- Summer: CMPS Elective

Third Year

- Fall: CMPS 215, CMPS elective, CMPS elective, CMPS graduate course
- Spring: CMPS elective, 3 Graduate Courses

Fourth Year

- Fall: 3 graduate courses + comprehensive (for thesis and project options)
- Spring: 3 graduate courses (for course-based option) or 2 graduate courses + project (for project option) or thesis (for thesis option)

Introductory Courses

CMPS 101 Introduction to Computer Science 2.2; 3 cr.
This course introduces the skills, concepts, and capabilities needed for effective use of information technology (IT). It includes logical reasoning, organization of information, managing complexity, operations of computers and networks, digital representation of information, security principles, and the use of contemporary applications such as effective Web search, spreadsheets, and database systems. Also, it includes a basic introduction to programming and problem solving through scripting web applications. Every term.

CMPS 201 Introduction to Programming 3.3; 3 cr.
This course introduces students to programming and computational thinking. A high-level programming language is used. Students will learn the principles of imperative and object-oriented programming in addition to basic data types, flow control (repetition and selection constructs), procedures and functions, parameter passing, scoping, recursion, arrays, and classes. Students are briefly introduced to simple algorithms and data structures. This course was previously numbered CMPS 200.

CMPS 202 Data Structures 3.3; 3 cr.
This course consolidates algorithm design and programming techniques, with an emphasis on abstract data types. The course introduces students to the design, analysis, and implementation of data structures as well as some of the key algorithms operating them. Topics include lists, stacks, queues, deques, sets/maps, search trees (binary search trees and AVL trees), heaps/priority queues (heap sort), hash tables, and graphs (breadth-first search and depth-first search). Prerequisite: a grade of at least C+ (or 70) in CMPS 201. This course was previously numbered CMPS 212. Every term.

CMPS 203 Programming for Everyone 3.3; 3 cr.
This course is designed for students with no prior exposure to computer science or programming. It aims to help students, regardless of their major, to feel justifiably confident of their ability to write small programs that allow them to accomplish useful goals. To this end, it provides students with a brief introduction to many topics in computer science so they will have an idea of what is possible when they need to think about how to use computation to accomplish some goals later in their career. The course uses the Python programming language. Not open to computer science students.

CMPS 204 Animation Tools 3.2; 3cr.
This course teaches students the knowledge needed to create digital prototypes of 2D and 3D games. The course covers: the conceptual framework of interactive environments, game programming approaches, techniques and tools, manipulation of visual effects and sound, object animation, movement control, worlds, and interactivity. Prerequisite: CMPS 201.

CMPS 206 Computers and Programming for the Arts 2.2; 3 cr.
This course is an introductory computer course that presents computing and information, and illustrates their use. The student is introduced to computers and their role in society with emphasis on conceptual understanding as well as operational proficiency. Topics include principles of computer operations both from the hardware and software perspectives, basic networking concepts, web authoring concepts including HTML, cascading style sheets, publishing, and data manipulation using spreadsheets and databases. No credit is given to computer science majors. Students can get credit for only one of CMPS 206, CMPS 208, or CMPS 209. Annually.

CMPS 207 Programming for Digital Art 3.3; 3 cr.
This course introduces students to the technical and conceptual skills necessary for developing websites and for analyzing and visualizing real data. In web design, students will learn

HTML5 and CSS3. In data analysis and visualization, students will learn to code using Python with an emphasis on organizing, analyzing, and plotting data. Visualizations produced by Python can then be embedded into html pages. The core skills learned in this course will be applicable to most programming languages. Not open to computer science students. Annually.

CMPS 208 Computing for Business 3.2; 3 cr.
Introduces Excel as a computer tool to plan, create, and use spreadsheets to formulate and solve business problems. It exposes students to a wide coverage of spreadsheet topics from introductory concepts such as problem formulation, writing formulas and functions, charting, grouping, and error prevention to more powerful and advanced features such as pivot tables, and analysis needed in decision-making. In addition, it boosts students' ability to collect, analyze, and forecast business and financial data to generate valuable insights. The course offers students an opportunity to apply skills in a laboratory environment in which they can experiment using Excel business problems designed for some selected topics. It provides the tools to perform modeling, calculations, analysis of various phenomena encountered in other courses such as finance, operations management, human resources, etc. No credit is given to computer science majors. Students can get credit for only one of CMPS 206, CMPS 208, or CMPS 209.

CMPS 209 Computers and Programming for the Sciences 2.2; 3 cr.
This course is designed to cover the essential computer skills needed by students in sciences. The course introduces how computers and Internet technologies work by emphasizing conceptual understanding as well as practical operational proficiency. Specifically, the course covers the essential concepts needed for designing spreadsheet applications, building personal relational databases, and programming using Visual Basic. Other topics covered include networking basics. No credit is given for computer science majors. Students can get credit for only one of CMPS 206, CMPS 208, or CMPS 209. Every term.

CMPS 211 Discrete Structures 3.1; 3 cr.
This course introduces students to discrete structures, focusing on those relevant to computing sciences. Topics covered include Logic and Proofs, Sets, Sequences, Functions, Growth of Functions, Algorithms and their complexities, Induction and Recursion, Counting, and Recurrence Relations. This course is equivalent to MATH 211. Every term.

CMPS 214 Design and Analysis of Algorithms 3.1; 3 cr.
This course introduces systematic methods for the design and (asymptotic) analysis of advanced algorithms and data structures. Topics include searching, sorting, order statistics, divide-and-conquer, greedy algorithms, dynamic programming, multi-threaded algorithms, matrix algorithms, as well as (advanced) graph algorithms. Several data structures are also studied such as red-black trees, binomial heaps, Fibonacci heaps, and suffix trees. Prerequisites: CMPS 211 or MATH 211 and a grade of at least C+ (or 70) in CMPS 202. This course was previously numbered CMPS 256. Annually.

CMPS 215 Theory of Computation 3.0; 3 cr.
A course that covers basics of automata and language theory, computation theory, and complexity theory. Topics include regular expressions, finite automata, context-free grammars and parsing, pushdown automata, closure properties, Turing machines, Church's thesis, reductions and decidability, time complexity and NP-completeness, space complexity, polynomial-space and log-space computations, circuit complexity, probabilistic computations and complexity classes, approximation algorithms, and selected topics as time permits. Prerequisites: CMPS 214. This course was previously numbered CMPS 257. Annually.

Computer Architecture and Parallel Computing

CMPS 221 Computer Organization and Design 3.0; 3 cr.
This course covers the fundamentals of computer architecture with a focus on single-core processor design. Topics include: digital logic design, combinational and sequential logic, hardware for computer arithmetic, floating point arithmetic, assembly programming, instruction set architecture, datapath design, pipelining and pipeline hazards, memory organization, cache design, and virtual memory. Prerequisites: CMPS 211 or MATH 211 and a grade of at least C+ (or 70) in CMPS 202. This course was previously numbered CMPS 255. Annually.

CMPS 224 GPU Computing 3.0; 3 cr.
This course covers parallel computing in the context of processors with many computational cores, with particular emphasis on data parallelism and general purpose GPU programming. The course introduces the CUDA programming model as well as the GPU architecture and memory organization. The course then covers how to map algorithms to parallel hardware and common optimizations for parallel code using numerous parallel patterns and applications case studies, such as: vector addition, matrix multiplication, convolution, stencil computation, histogram, reduction, prefix-sum, ordered merge, sorting, sparse matrix computation, graph traversal, and others. The course also covers a selection of advanced parallel programming practices. Students cannot receive credit for both CMPS 224 and EECE 696. Prerequisites: CMPS 221 or Instructor Consent.

Programming Languages and Compilers

CMPS 231 Programming Languages 3.0; 3 cr.
This course covers the fundamentals of programming language design and implementation. The course introduces functional programming and examines the language design principles underlying functional, imperative, and object-oriented languages. Type systems are also introduced. The course also covers the initial stages of programming language implementation, including lexing, parsing, and semantic analysis. Prerequisite: a grade of at least C+ (or 70) in CMPS 202. This course was previously numbered CMPS 258. Annually.

CMPS 232 Compiler Construction 3.0; 3 cr.
This course covers the design and implementation of optimizing compilers starting from source code representation down to machine code. Topics include intermediate representations, linkage and storage conventions, intermediate code generation for imperative and object-oriented languages with polymorphism, global dataflow analysis and the iterative dataflow algorithm, local and global optimizations, backend code generation, and register allocation. Prerequisites: CMPS 221. This course was previously numbered CMPS 274. Annually.

CMPS 240 Operating Systems 3.0; 3 cr.
This course provides an introduction to the fundamentals of operating system function, design, and implementation. It contains a theory component illustrating the concepts and principles that underlie modern operating systems and a practice component to relate theoretical principles with operating system implementation. The course is divided into three major parts. The first part of the course discusses concurrency (processes, threads, scheduling, synchronization, and deadlocks). The second part of the course discusses memory management (memory management strategies and virtual memory management). The third part of the course concerns file systems, including topics such as secondary storage systems and I/O systems. If time permits, the following topics will be briefly examined: Virtualization, security, distributed synchronization, and perhaps other topics. A case study of a contemporary operating system like UNIX accompanies the course. Prerequisite: CMPS 221. This course was previously numbered CMPS 272. Annually.

CMPS 241 Systems and Network Programming 3.0; 3 cr.
This course introduces students to computer systems from a programming perspective to prepare them for more advanced systems topics such as operating systems, computer networks, and computer and information security. Students will learn a low-level system language and use it to design and develop high quality system applications. Additional topics include but not limited to memory management, concurrency, socket programming, inter-process communication, parallel and distributed computing, networking overview, basics of client-side and server-side programming, and security issues in computing systems. Prerequisite: a grade of at least C+ (or 70) in CMPS 202 . This course was previously numbered CMPS 273. Annually.

CMPS 242 Computer Networks 3.0; 3 cr.
An introduction to network architectures and protocols, placing emphasis on Internet design principles and methodology. Specific topics include application layer protocols, network programming, transport protocols, circuit switching and packet switching, routing algorithms, multicast, local and wide area networks, error detection and correction, and performance evaluation. Prerequisite: CMPS 221. This course was previously numbered CMPS 284. Annually.

CMPS 243 Computer and Information Security 3.0; 3 cr.
This course introduces students to the world of information and computer security. Students will be exposed to various security vulnerabilities of computing and networking systems and learn their fundamental aspects such as cryptography, user authentication, access control principles, trusted computing & multilevel Security, database security, SQL injection attacks, malicious software, worms, malwares, viruses, denial-of-service attacks, intrusion detection and prevention systems, firewalls, etc. Also, other topics related to operating system security, web security, wireless security, and Internet security are covered as time permits. The course will examine causes of security breaches and give methods to help prevent them. Prerequisite: a grade of at least C+ (or 70) in CMPS 202 and senior standing. This course was previously numbered CMPS 283.

CMPS 244 Database Systems 3.1; 3 cr.
This course covers the fundamental concepts of database systems. Topics include data modeling using the Entity-Relationship model and the Relation model; query languages including relational algebra and SQL; File Organization and Indexing; Normalization; database programming; and NoSQL databases. The course is offered in blended-format and includes a term project. Prerequisite: a grade of at least C+ in CMPS 202 or (a grade of at least C+ in (CMPS 201 or CMPS 203) and junior standing). This course was previously numbered CMPS 277. Annually.

Computational Science

CMPS 251 Numerical Computing 3.1; 3 cr.
Techniques of numerical analysis: number representations and round-off errors, root finding, approximation of functions, integration, solving initial value problems, Monte-Carlo methods. Implementation and analysis of the algorithms are stressed. Projects using MATLAB or a similar tool are assigned. Prerequisites: a grade of at least C+ (or 70) in CMPS 201 or EECE 230, and MATH 201. This course is equivalent to MATH 251. Annually.

CMPS 254 Numerical Linear Algebra 3.0; 3 cr.
A course on direct and interactive methods for solving general and special systems of linear equations, covering LU decomposition, Choleski decomposition, nested dissection, marching algorithms; Jacobi, Gauss-Seidel, successive over-relaxation, alternating directions, and

conjugate gradient iterative methods. This course is equivalent to MATH 281. Prerequisites: MATH 218 or MATH 219. Prerequisite or Co- requisite: CMPS 251. This course was previously numbered CMPS 281. Annually.

Artificial Intelligence and Data Science

CMPS 261 Machine Learning 3.1; 3 cr.
This course covers Machine Learning theory, algorithms, and applications. Machine Learning is currently at the heart of Artificial Intelligence. It enables computational systems to adaptively improve their performance with experience accumulated from the observed data. This course balances theory and practice and covers the mathematical as well as the heuristic aspects. It also covers the latest trends in Machine Learning such as deep learning. Prerequisites: a grade of at least C+ (or 70) in CMPS 201 or CMPS 203, one of the following (BUSS 200, STAT 201, STAT 210, STAT 230, STAT 233, EDUC 227,ECON 213, or NURS 203), and MATH 218 or MATH 219. This course was previously numbered CMPS 287.

CMPS 262 Data Science 3.1; 3 cr.
This course introduces foundational elements comprising the data science pipeline. It covers techniques in data acquisition, cleaning, and preparation for machine learning, basic applied machine learning techniques spanning distance-based algorithms, rule-based algorithms, and black box algorithms, basic statistics for machine learning (descriptive, inferential, and estimation statistics), basic time series analysis and forecasting techniques, data production techniques using knitr and R-Markdown, and machine learning interpretability using SHAP. The course is delivered using both the R and Python programming languages. Prerequisites: a grade of at least C+ (or 70) in CMPS 201 or CMPS 203, one of the following (BUSS 200, STAT 201, STAT 210, STAT 230, EDUC 227,ECON 213, or NURS 203). This course was previously numbered CMPS 276.

Software Engineering

CMPS 270 Software Construction 3.0; 3cr.
Software Construction provides methods, tools and techniques to develop, modify and maintain complex and efficient software systems. Topics include object-oriented design; specifications and invariants; abstract data types, testing, design patterns, concurrency; version control and event driven programming. Prerequisite: a grade of at least C+ (or 70) in CMPS 202. This course was previously numbered CMPS 252.

CMPS 271 Software Engineering 3.0; 3 cr.
This course introduces practical industry-standard software engineering best practices to students that have already written moderate sized software. Students are exposed to full development lifecycle methodologies, choosing the right SDLC, requirements management, software design, design patterns, testing. A group term project provides a holistic hands-on experience building an end-to-end software application using agile principles and emulating a real-world environment often for real clients with real needs. Other topics covered include working in a team, professionalism, project management, and ethics. Prerequisite: a grade of at least C+ (or 70) in CMPS 202. This course was previously numbered CMPS 253. Annually.

CMPS 278 Web Programming and Design 3.3; 3 cr.
This course introduces the fundamentals needed to program on the Internet as well as the state-of-the-art technologies used in designing and developing rich multi-tiered web-based applications. It presents the basics of client-side/server-side web programming and the skills and tools needed to create dynamic Web-based applications. It provides in-depth coverage of various markup languages and their associated cascading style sheets, several client side and server side scripting languages (such as C#, PHP and JavaScript including JQuery, Angular, and NodeJS) in addition to AJAX-enabled rich Internet applications, client-side technologies, web services, Web Servers, and multi- tiered applications using relational database systems. Prerequisite: a grade of at least C+ (or 70) in CMPS 202. Annually.

CMPS 279 Mobile Applications Development 3.0; 3 cr.
This course introduces students to the world of mobile applications development from a software engineering perspective. Students will learn the importance of a good design for a mobile application, in addition to being able to write a basic to intermediate mobile application. The course includes many software design patterns and user interface design patterns. Students will learn how to collect, store, and present data in a mobile application, in addition to using the different exciting features of a mobile such as locations, graphics, cameras, and other features. Pre-requisite: a grade of at least C+ in CMPS 202. Annually.

Graphics and Gaming

CMPS 280 Digital Media Programming 3.0; 3 cr.
The class is an introduction to digital media programming and processing. The course explains the essential technology behind images, animations, sound, and video and illustrates how to write interactive programs that manipulate these media in creative ways. The class assumes basic knowledge in Java or a first course in programming. Prerequisite: a grade of at least C+ (or 70) in CMPS 201. This course was previously numbered CMPS 230.

CMPS 285 Computer Graphics 3.0; 3 cr.
A course that covers the practice of, and underlying mathematical foundation for, interactive graphics programming. Topics include basic graphics systems, graphics primitives and attributes, windows and viewports, clipping, geometric transformations, color systems, 2D texture mapping, and introduction to 3D graphics. Programming in OpenGL will be used. Prerequisite: a grade of at least C+ (or 70) in CMPS 202. Annually.

CMPS 286 Computer-Aided Geometric Design 3.0; 3 cr.
A course that discusses the representation of free-form curves and surfaces in modeling objects by computers, including curve approximation and interpolation, spline curves (Bezier and B-splines), visual smoothness of curves, geometric continuity, parameterization of curves, introduction to surface interpolation and approximation, and spline surfaces (Bezier and B-splines). Prerequisite: CMPS 285. Biennially.

CMPS 288 Game Programming 3.0; 3 cr.
This course introduces students to game programming using state of the art technologies. The course covers both theoretical backgrounds and implementation details of different components of games. Topics covered will be the physical control of a game character, interactions between objects, inventory, HUD, and AI. Pre-requisite: a grade of at least C+ in CMPS 202. Annually.

CMPS 289 Human Computer Interaction 3.0; 3 cr.
This course describes the psychological principles of human-computer interaction. Evaluation of user interfaces. Usability engineering. Task analysis, user-centered design, and prototyping. Conceptual models and metaphors. Software design rationale. Design of windows, menus, and commands. Voice and natural language I/O. Response time and feedback. Color,

icons, and sound. Internationalization and localization. User interface architectures and APIs. Case studies and project. Prerequisites: CMPS 271. Biennially.

Special Courses

CMPS 290 Internship 0.0; 0 cr.
This course requires students to undergo professional training in computer science for eight full weeks at a recognized firm subject to department approval. Prerequisite: Consent of Instructor.

CMPS 296 Computer Science Tutorial 1–3 cr.
Prerequisite: Senior standing.

CMPS 297 Special Topics in Computer Science 1.0-3.0; 1–3 cr.
A course on selected topics which change according to the interests of instructors and/or students. Topics are chosen from state-of-the-art innovations in software and computer information systems. Prerequisite: Consent of instructor. Annually.

CMPS 299 Capstone Project 3.0; 3 cr.
A course to enhance students' skills with practical experience giving them the opportunity to integrate knowledge accumulated in different courses. In this course, students must deliver a software product which passes through the design, analysis, implementation, testing, and evaluation stages. Prerequisites: consent of the instructor and senior standing.

CMPS 299A Capstone Project 1.0; 1 cr.
It is the first course in a series of two courses (CMPS 299A and CMPS 299B), taken in consecutive semesters. The objective of both courses is to enhance students' skills with practical experience giving them the opportunity to integrate knowledge gained from courses across the curriculum. Students must work in teams and can pursue either an applied or research project. If the project is applied, students must identify the problem, analyze it, identify/define functional and non-functional requirements and constraints, and propose a valid software architecture. If the project is research oriented, students must identify the problem, analyze the work related to the problem being tackled, and propose a novel solution to the problem. Regardless of the choice of project, students must document their work in the form of written reports and oral presentations. Prerequisites: consent of the instructor and senior standing. Every term.

CMPS 299B Capstone Project 2.0; 2 cr.
It is a continuation of CMPS 299A, where the project that was started in CMPS 299A is completed. If the project is applied, students must deliver a fully functional software along with the proper documentation. If the project is research oriented, students must deliver a report that includes the motivation of the work and its impact, related work, proposed approach, evaluation, and comparison with other approaches. Prerequisites: CMPS 299A. Every term.

42 Credits in Computer Science

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (6)	Understanding the World (3), Quantitative Reasoning (54)	Community-Engaged Learning (3)	Technical Electives (3)

Lecture Courses (9+12+ 6+3+3 +54+3)	Required Arabic course (3) Required English courses (usually 6): ENGL 203(3), 204(3), as determined by placement	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required courses (6)	Required Understa- nding the World courses (3) Required CMPS courses (24): CMPS 201(3), 202(3), 214(3), 215(3), 221(3), , 240(3), 241(3), 270(3) Required CMPS elec- tives (18): to be chosen from CMPS courses above 214 (Except CMPS 297T) Required mathematics courses (12): MATH 201(3), MATH 211(3) (or CMPS 211), MATH 218 (or 219), STAT 230 (or 233)	Required courses (3)	Required 3 credits course (3): CMPS elective numbered 214 or above (Except CMPS 297T), BIOL 251, ECON 214, ECON 217, FINA 210, MATH 210, MATH 261, MATH/ STAT 234, MATH/ STAT 238, PHYS 222, PHYS 228, PHYS 235, PSYC 222, PSYC 229
Seminar (0)						
Labor- atory				CMPS 201, 202, 278		
Research project (0 or 3)						

Department of Earth Sciences

Chairperson:	Doummar, Joanna J.
Professor:	Abdel-Rahman, Abdel-Fattah M.
Associate Professors:	Doummar, Joanna J.; Salah, Mohamed K.
Assistant Professors:	Haidar, Ali T. ; Nemer, Tony S.
Instructor:	Khadra, Wisam M.

The Department of Earth Sciences offers programs leading to the degree of Bachelor of Science in Geology and Master of Science degrees in certain areas of the vast field of earth sciences. It also offers a more broadly-based program leading to the degree of Bachelor of Science in Petroleum Geosciences. Students wishing to transfer to Geology or Petroleum Geosciences must secure the approval of the department. In addition, students must have a strong background in sciences and have taken the freshman science program or its equivalent. The department also offers undergraduate elective courses which include GEOL 101, GEOL 102, GEOL 103, GEOL 104, GEOL 106, and GEOL 201 in the area of general Geology, and GEOL 204, GEOL 205, GEOL 206, GEOL 208 and GEOL 227 in the fields of environmental and planetary Geology.

Field trips are a required part of most Geology courses.

Mission Statement

The Department of Earth Sciences provides a solid grounding in Geosciences at the service of a sustainable Earth. Through a series of foundational courses, the student acquires a thorough appreciation of the physical, chemical, and biological processes shaping the structure and evolution of the Earth's geosphere, atmosphere, hydrosphere, and biosphere and the complex interactions between them. Process-based concepts combined with fieldwork techniques, lab, and computational experience allow the construction of quantitative models of relevance to resource exploration (e.g., water, oil and gas, and minerals), risk and hazard assessment (e.g., earthquakes and landslides), and emerging environmental issues (e.g., landfills, soil, and water contamination). A venerable geological museum features a historical collection of rocks, fossils, and maps which bring the field to the classroom with in-house exposure to Earth Science processes. With our track-oriented approach and interdisciplinary curriculum, our graduates acquire an appreciation of the broad relevance of geosciences to landscapes, built and natural environments, and life's evolution around them. We seek to provide our students with the knowledge, conceptual frameworks, and technical skills that prepare them to lead successful careers as professional geoscientists and/or future researchers.

BS Degree in Geology

The requirements for a BS degree in Geology are 90 credits for students entering the department at the sophomore level, including 36 credits in the major. The distribution of university requirements is as follows:

Core required Geology courses: GEOL 201, GEOL 203, GEOL 207, GEOL 213, GEOL 216,

GEOL 216L, GEOL 219, GEOL 221, GEOL 223, GEOL 223L, GEOL 226, GEOL 297, GEOL 298 and GEOL 299 which is a total of 30 credits, in addition to two required Geology elective courses (6 credits).

Students have to take three required Quantitative Reasoning (9 credits) - MATH 201, STAT 210 or STAT 231, and CMPS 203 or equivalent. In addition to two Understanding the World courses (6 credits) from Chemistry and/ or Physics. Students may opt for MATH 202 or Understanding the World course to fulfill the 3 remaining mandatory credits.

Students are also required to take a total of 6 credits to be selected from a list of approved departmental courses or interdepartmental courses. A 0-credit mandatory internship course GEOL 299 provides students with the opportunity to acquire a professional experience in the field of Earth Sciences.

No course may be taken without its prerequisite unless authorized by the department chair.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Students admitted in Geology are eligible to continue in the program provided they obtain, by the end of their third regular term at AUB, a minimum average of 2.3 in any three out of the following five courses: GEOL 201, GEOL 216, GEOL 213, and GEOL 223. Otherwise, they will normally be dropped from the department. Consideration for readmission requires a minimum cumulative average of 2.3 overall and a minimum average of 2.3 in any three out of the following five Geology courses: GEOL 201, GEOL 216, GEOL 213, and GEOL 223, and this should be achieved within the following two regular terms (at the very latest) after being dropped from the major. Majors must complete the following courses, in which a general average of 2.3 or more must be maintained in core geology required courses.

BS Degree in Petroleum Geosciences

The requirements for a BS degree in Petroleum Geosciences are 90 credits for students entering the department at the sophomore level, including 40 credits of Geology courses, 6 credits of chemistry and physics courses, 6 credits of business courses, 3 credits in economics (ECON 211 or 212) and 3 credits in education (EDUC 215 or 230). The distribution of university requirements is as follows:

The core courses of the Petroleum Geosciences program (totaling 58 credits) are GEOL 201, GEOL 203, GEOL 207, GEOL 216, GEOL 211, GEOL 212 (or equivalent), GEOL 213, GEOL 219, GEOL 221, GEOL 222 & GEOL 214 (or equivalent), 225 or equivalent, GEOL 226, GEOL 227, GEOL 229 (or equivalent), GEOL 297, GEOL 298, ACCT 210, MNGT 215, and ECON (GE); one of the following chemistry courses: CHEM 201, CHEM 202, or CHEM 208, as well as one of the following physics courses: PHYS 204, PHYS 205, or PHYS 210. In addition, a required elective course, CMPS 203, MATH 201, or STAT 210, must be completed.

Students admitted in Petroleum Geosciences are eligible to continue in the program provided they obtain, by the end of their third regular term at AUB, a minimum average of 2.3 in any three out of the following courses: GEOL 201, GEOL 211, GEOL 212, GEOL 213, and GEOL 222. Otherwise, they will normally be dropped from the department. Consideration for readmission requires a minimum cumulative average of 2.3 overall and a minimum average of 2.3 in any three out of the following five Geology courses: GEOL 201, GEOL 211, GEOL 212, GEOL 213, and GEOL 222. This should be achieved within the following two regular terms (at the very latest) after being dropped from the major.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Minor in Geology

To obtain a minor in Geology, students must complete the following core course GEOL 201, and any four courses from the following: GEOL 209, GEOL 211 or 216, GEOL 213, GEOL 222 or 223, and GEOL 227 (for a total of 15 credits).

Course Descriptions

GEOL 101 The Earth, Present and Past 3.0; 3 cr.

A freshman level study of the present-day processes that shape the Earth we live on, such as plate tectonic activity, rock formation and erosion, coupled with an overview of the origin and history of the Earth and life. Every term.

GEOL 102 Environmental Physical Geography 3.0; 3 cr.

An introduction to the structure, classification, physical processes and characteristics of the Earth's atmosphere, hydrosphere and biosphere, dynamics of change, and associated environmental impacts. Every term.

GEOL 103 Introduction to Marine Geology 3.0; 3 cr.
A freshman level survey of oceanic geological processes, wave dynamics, submarine springs, marine economic mineral resources, marine communities, pollution, global change, and marine-related environmental issues. Every term.

GEOL 104 Natural Disasters 3.0; 3 cr.
A freshman level course covering events involving natural forces that have major devastating effects on humankind. These include mud flows, landslides and slope failure, earthquakes, tsunamis, explosive eruptions and volcanic hazards, meteoritic impacts and mass extinctions, hurricanes and tornadoes, flooding, and forest fires. Every term.

Geol 106 Water and Climate 3.0; 3 cr.
A freshman-level course highlighting the science of water as a vital resource, including the water cycle, and the difference between streams, rivers, springs, and wells. This course presents also the main scientific evidence of climate change and its possible effects on water resources availability, demand, and supply in a changing world. Several worldwide initiatives for climate change adaptation and water resources management will be also addressed and discussed through presentations, readings, and class debates. Every term.

GEOL 201 Physical Geology 3.0; 3 cr.
An introduction to minerals, igneous, sedimentary and metamorphic rocks, geological structures, and external Earth processes, including the geologic work of streams, glaciers, groundwater, wind, and the plate tectonics theory. Every term.

GEOL 203 Physical Geology Laboratory 0.2; 1 cr.
An introduction to the identification of rocks and minerals in hand specimen, geographic and geological maps, and basic interpretation of geological data. Every term.

GEOL 204 Dinosaurs and Life History 3.0; 3 cr.
A sophomore and higher-level course covering topics that include structure and tectonics of the Earth, origin and evolution of life, climatic changes through time, life forms throughout the geologic eras, bacteria and algae in the Precambrian, trilobites, fishes and first trees, in the Paleozoic, dinosaurs, birds and reptiles, in the Mesozoic, mammals, in the Cenozoic, major extinction events in Earth's history, and the theory of evolution. Not open for PTGS or Geology students. Every term.

GEOL 205 Earth Resources and Energy 3.0; 3 cr.
A study of the main economic mineral resources and traditional and alternate energy resources, with an emphasis on the environmental impacts of their use and misuse. A special emphasis is given to regional issues. Open to both arts and sciences students, but not to Geology and Petroleum Geosciences students. Every term.

GEOL 206 Planetary Geology 3.0; 3 cr.
A sophomore and higher-level course covering topics that include the origin of the solar system, Earth as a model of planetary evolution, meteorites and impact craters, planetary geology of planets Mercury, Venus, Mars and its recent discoveries, Jupiter and the asteroidal belt, Saturn and Titan, Uranus, Neptune and Pluto and their major satellites, with some emphasis on the patterns of variation among planets. Planetary magnetic fields, atmospheres, bulk chemical compositions, internal structure, and present geologic activities are covered. Not open for PTGS or Geology students. Every term.

GEOL 207 Map Interpretation 2.2; 1 cr.
A course on the interpretation of topographic, geomorphological, and geological maps for the inference of geological properties and geometries. This course also introduces spatial interpolation techniques and the construction of geologic maps and cross-sections using dedicated software. Prerequisites: GEOL 201 or consent of instructor. Annually.

GEOL 208 Water in a Changing World 3.0; 3 cr.
This course provides a brief introduction to the science of water, both from a geological/hydrological/environmental and from an archaeological/historical perspective. The course explores how societies in the past and in the present dealt or deal with water management issues. The course aims to provide students with the opportunity to explore water related issues with supported science and historical evidence. Formerly: GEOL 290 A. Students cannot receive credit for both GEOL 208 and AROL230. Annually.

GEOL 209 Building & Destruction of Mountains 3.0; 3 cr.
A sophomore and higher-level (GE natural-science) course covering topics that include global landforms and tectonics, endogenic processes and the role of Earth's mantle, exogenic processes (fundamentals of weathering and erosional agents), fluvial, groundwater, and aeolian processes, coastal processes and reshaping of the seashore, glacial / periglacial processes and landforms, sea-level change, uplift, and inundation, as well as present geologic activities related to Earth's landforms. Every term.

GEOL 210 Geomorphology 3.0; 3 cr.
An introduction to the study of land forms and the interaction of external geological forces and erosion agents with the structure and composition of their surface rocks. This course is also an examination of the interaction between the internal and external Earth processes responsible for the development of land forms. Prerequisites: GEOL 201 and GEOL 203, or consent the of instructor. Occasionally.

GEOL 211 Crystallography and Physical Mineralogy 2.2; 3 cr.
An introduction to the study and classification of crystals; properties of minerals as related to their crystal structure; identification, description, and classification of minerals. This course entails practical work with crystal models and hand specimens of common minerals. Students cannot receive credits for GEOL 211 and GEOL 216/GEOL 216L. Annually.

GEOL 212 Optical Mineralogy 2.2; 3 cr.
An introduction to the theory of crystal optics, the polarizing microscope, and methods of mineral identification based on their optical properties. This course is also a systematic study of the common rock forming minerals in thin sections. Prerequisite: GEOL 211 or consent of instructor. Students cannot receive credits for GEOL 212 and GEOL 216/GEOL 216L. Annually.

GEOL 213 Structural Geology 2.2; 3 cr.
An introduction to the study of rock deformation, the relationship between stress and strain, and the interpretation of structures and their significance to regional and global tectonics. Prerequisite: GEOL 201. Annually.

GEOL 214 Stratigraphy 2.2; 3 cr.
A course on the principles of interpretation of the sedimentary rocks and methods of correlation and an introduction to the stratigraphy of Lebanon in the context of the regional geology of the Middle East. Prerequisite: GEOL 222 or consent of instructor. Students cannot receive credits for GEOL 214 and GEOL 223/GEOL 223L. Annually.

GEOL 216 Mineralogy and Optical Mineralogy 2.2; 3 cr.
An introduction to the main concepts of crystallography, fundamentals of crystal chemistry, classification of the main mineral groups, mineral associations, and ore minerals/metals formation, introduction to the theory of crystal optics, the interaction of light and matter, and the resultant optical properties used for mineral identification under the optical microscope, the relation between physical/optical properties of minerals and their internal atomic structures, and a brief introduction to the use of specific minerals in environmental and medical applications. The practical work is given in a separate Lab-course. Annually. Previously GEOL 211 GEOL 212.

GEOL 216L Mineralogy and Optical Mineralogy Laboratory 0.2; 1 cr.
GEOL 216L is an introduction to crystallography, determination of crystal systems and point groups, identification of the main rock-forming and ore minerals in hand specimens using their physical properties, introduction to crystal optics and the optical microscope, a systematic study of the common rock-forming minerals in thin sections and their identification based on their distinct optical properties, and use of chemical data to calculate mineral stoichiometry. Annually. Previously GEOL 211 GEOL 212.

GEOL 219 Geologic Field Methods 0.3; 2 cr.
An introduction to the applied methods and concepts used in field geological mapping. The students will learn how to write geological reports, produce geological maps and cross-sections, and investigate geological problems based on extensive mapping fieldwork in Lebanon. Prerequisites: GEOL 207, GEOL 223, and GEOL 213 or consent of the instructor. Annually.

GEOL 221 Petrology 2.2; 3 cr.
A course on the origin, composition, occurrence, and classification of igneous and metamorphic rocks and their systematic identification in hand specimens and in thin sections. Prerequisite: GEOL 216 and GEOL 216L or consent of instructor. Annually.

GEOL 222 Sedimentology 2.2; 3 cr.
A study of the characteristics and classification of sedimentary rocks using petrographic and field study methods, with some focus on diagenetic processes, depositional environments, and elementary basin analysis. Pre- or corequisites: GEOL 202 and GEOL 212, or consent of instructor. Students cannot receive credits for GEOL 222 and GEOL 223/GEOL 223L. Annually.

GEOL 223 Sedimentology and Stratigraphy 2.2; 3 cr.
This course is a sophomore and higher-level course covering topics that include basic theoretical knowledge in sedimentation and stratigraphy. The student will get acquainted with depositional systems, carbonates, bio-sedimentology, diagenesis, provenance, geochemistry, sediment transport, and basin analysis. This course also focuses on the vertical and lateral relationships between units of sedimentary rocks that are defined on the basis of lithologic and geophysical properties, paleontological characteristics, and age relationships. Previously GEOL 222 and GEOL 214.

GEOL 223L Sedimentology and Stratigraphy Lab 0.3;1 cr.
Laboratory component of sedimentology and stratigraphy. The students learn how to use basic and advanced techniques to classify sedimentary rocks based on their chemical composition and texture and relate them to a depositional environment. Furthermore, they learn some basic skills for thin section preparation, inspection with a polarizing microscope, potentially with the Scanning Electron Microscope (SEM). They will apply the sieving and counter coulter techniques to obtain particle size distribution curves and will analyze them statistically. Additionally, two sessions are devoted for the identification of vertebrate and invertebrate macro and micro fossils. This course introduces the students to correlations using seismic stratigraphy and other methods in stratigraphy.

GEOL 224 Regional Geology 3.0; 3 cr.
A course on the geology of the Middle East region, with emphasis on its stratigraphy, structure, geological history, and tectonic evolution, and with reference to oil and mineral resources in the region. Prerequisites: GEOL 213 and GEOL 222, or consent of instructor. Annually.

GEOL 225 Petroleum Geology 3.0; 3 cr.
A course on hydrocarbon formation and occurrence as oil and gas fields, source and reservoir rocks, petroleum traps, as well as exploration and extraction methods. Prerequisites: GEOL 213, GEOL 222, or consent of instructor. Annually.

GEOL 226 Introduction to Geophysics 3.0; 3 cr.
A junior/senior level course covering the basic principles and fundamental concepts of the main geophysical methods: seismic, electrical, electromagnetic, and geophysical borehole logging techniques, as well as gravimetry and magnetometry. Applications of the various geophysical techniques in some domains as mining of ore minerals, the geotechnical field and the exploration of hydrocarbons and other natural resources are covered briefly. Prerequisite: GEOL 201. Annually.

GEOL 227 Alternate Energy & Climate 3.0; 3 cr.
A sophomore and higher-level (GE natural-science) course that offers a wide overview on fossil fuels and environmental impacts, principles & processes involved in harvesting alternate energy resources: solar energy, hydropower and water resources, wind power, biomass energy, geothermal and tidal energy, nuclear energy and its impacts, climate science, anthropogenic climate forces and the resultant effect on climate change. Every term.

GEOL 229 Individual Field Work Project 0.18; 6 cr.
A complete and independent geological investigation of a designated area and preparation of a detailed geological map, cross-sections, and report. For geology majors who have junior or senior standing. Pre- or corequisite: GEOL 219. Annually.

GEOL 271/272 Directed Study in Geology 1.0-3,0; 1–3 cr.
A tutorial that may be repeated for credit with different topics or may replace a required course. Occasionally.

GEOL 290 Special Topics in Geology 1.0-3,0; 1–3 cr.
A course that covers a variety of topics in Geology not typically offered by the department. May be repeated for credit. Every term.

GEOL 297 Geological Mapping 0.18; 3 cr.
This course is a complete and independent geological investigation of a designated area and the preparation of a detailed geological map and geological field report. For juniors and seniors in the major. Prerequisite: GEOL 219. Annually. Previously GEOL 229.

GEOL 298 Applications in Earth Sciences 3.0; 3 cr.
GEOL 298 is a capstone course where students apply the knowledge and skills acquired in various core and required courses in real-life problems or research questions in tracks related to Environmental Geosciences, Engineering Geosciences, Life resilience and Extinctions, Resources Exploration, Petroleum Geosciences, and Geosciences for Landscapes. Open for major only, annually. Prerequisite: GEOL 297 and completion of at least 2 major related electives.

GEOL 299 Professional Experience 0 cr.
Six full weeks of approved internship in a recognized consulting and/or contracting firm or research institute in AUB, Lebanon, or abroad, that allows students to apply their knowledge and skills in the applied field of Earth Sciences. Open to junior and senior major students only. Prior approval of instructor.

36 Credits[1]

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (Min. 6)	Understanding the World Quantitative Reasoning (9:3/6+3/6)	Community-Engaged Learning (3)
Lecture Courses (9+12+6+36 +9+3)	Required Arabic course (3) Required English courses: 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required credits in Societies and Individuals to be selected from an approved GE list: 6 credits	Required Geology courses: GEOL 201(3), 216[4](3), 213[2,4](3), 219[2,4](3), 221[2,3,4](3), 223[2](3), 226(3), 297[2,3](3), 298(3) Elective geology courses: GEOL 204[2,3](3), 208(3), GEOL 209[2,3](3), 225[2,3](3), 271[2,3] (3), 272[2,3](3), 290(3) Two understanding the world courses must be an approved general education course from outside the major (PHYS 204, 205, 210) or CHEM 201, 202,208) Required quantitative reasoning courses: CMPS 203(3), MATH 201(3) and STAT 210 (3) or STAT 231(3) Math 202 or understanding the world course (3) credits from approved GE in physics or chemistry and courses in Biology (BIOL 201 and BIOL 202)	To be selected from an approved GE list

Seminar (18 + 12)				Geology courses: GEOL 201(3),213[2,3,4](3), 216[2,3](3), 221[2,3,4](3), 223[2,3,4](3), 226(3) Elective geology courses: GEOL 225[2,3](3), GEOL 208, GEOL 209[2,3](3), GEOL 227[2,3](3), GEOL 290(3) Two approved GEOL courses or approved courses from MSFEA, FAS (BIOL), FHS and FAFS	
Laboratory (11+4)				Required geology courses: GEOL 203(1), GEOL 207 (1), GEOL 216L (1), GEOL 223L[2,4](1), GEOL 213[2,3,4] (3), GEOL 219[2,4] (2), GEOL 221[2,4](3), GEOL 226(3)	
Research Project (36+12)				Required geology courses: GEOL 219[2](2), GEOL 297[2,4](3), GEOL 298[2,3,4](3), GEOL 299[2,3](0)	

[1] Plus 50 required and elective credits
[2] Combined lecture, laboratory (field), and research project courses
[3] Combined lecture and seminar courses
[4] Combined lecture and lab courses

40 Credits[1] in Petroleum Geoscience

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (Min. 6)**	**Major requirements (40) Understanding the World, Quantitative Reasoning (6:3+3)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+9+3 +37+6+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required business courses: ACCT 210(3), MNGT 215(3) Economics course: ECON 211(3) or ECON 212(3) One approved GE Societies and Individuals course (3): EDUC 215(3) or EDUC 230(3)	Required geology course: GEOL 201(3), 211(3), 212[2,4](3),213[2,4](3), 214[2,3](3), 219[2,4](3), 221[2,3,4](3),222[2,3,4](3), 225[2,3](3), 226[4](3), 227(3), 229[2,3](6) Chemistry and physics courses: CHEM 208 and one of PHYS 204(3), PHYS 205(3), PHYS 210(3). Elective geology courses: GEOl 271[2,3](3), 272[2,3](3), 290(3) Required elective computer science courses: MATH 201(3), STAT 210(3) or CMPS 203(3)	To be selected from an approved GE list
Seminar (30+12)				Required geology courses: GEOL 2012(3), 213[2,3,4](3), 214[2,3](3), 219[2,4](2), 221[2,3,4](3), 222[2,3,4](3), 225[2,3](3), 229[2,3](6) Elective geology courses: 271[2,3](3), 272[2,3](3), 290(3)	

Laboratory (13,3)				Required geology courses: GEOL 203(1), GEOL 207(1), 211(3), 212[2,4](3), 213[2,3,4](3), 222[2,3,4](3), 226[4](3), 227[4](3)	
Research Project (27+12)				Required geology courses: GEOL 201[4](3), 213[2,3,4](3), 214[2,3](3), 219[2,4](3), 221[2,3,4](3), 222[2,3,4](3), 225[2,3](3), 229[2,3](6) Elective geology courses: GEOL 271[2,3](3), 272[2,3](3), 318[3,4](3)	

[1] Plus 50 required and elective credits
[2] Combined lecture, laboratory (field), and research project courses
[3] Combined lecture and seminar courses
[4] Combined lecture and lab courses

Department of Economics

Chairperson:	Neaime, Simon E.
Professor Emeritus:	Makdisi, Samir
Professor:	Neaime, Simon E.
Associate Professor:	Salti, Nisreen I.
Assistant Professors:	Abboud, Ali; Tuncay, Muhammed Alparslan; Yamout, Nadine
Lecturers:	Bou Nassar, Makram; Ramadan, Usamah H.
Instructors:	El Baba, Nora; Hamdan, Dana; Kanaan, Maya Z.; Makki, Ghina; Makki, Malak, Z.; Nader, Pamela; Rbeiz, Sylvia; Sabra, Raja

BA in Economics

Mission Statement

The undergraduate program in Economics is a rigorous quantitative program which enhances students' analytical skills and critical thinking. In addition to broader economic concepts, the understanding of economic issues pertaining to the Middle East and North Africa region is given special attention. The department is committed to a liberal arts philosophy and the development of leadership skills in the field of economics. The Program develops its students' professional competencies and responsible citizenship skills, and prepares them for a variety of careers in economic research, financial economics, and banking.

Degree Requirements

The requirements for a BA degree in Economics are 90 credits for students entering the department at the sophomore level. Students accepted in economics must attain an average of 2.3 or above in major courses during the first three terms in order to remain in the program. The distribution of these courses is as follows:

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Major Requirements

- Major Courses: 36 credits of Economics courses including 21 credits as required courses (ECON 211, ECON 212, ECON 213 (or STAT 230), ECON 214, ECON 215, ECON 217, ECON 227), and 15 credits as elective economics courses
- Required courses from outside the department: 12 credits including MATH 201, MATH 202, MATH 218 (or MATH 219), and ACCT 210
- Electives from outside the department: 6 credits of free electives. Students majoring in Economics are restricted from taking MATH 203 and MATH 204 as a free elective.

Transfers from other programs to a major in economics require an overall average of 3.0 or more; a minimum grade of B in each of ECON 211 and ECON 212; a minimum grade of C+ in ENGL 203; and a minimum cumulative average of 2.3 in MATH 201 and MATH 202.

Economics majors whose economics average falls below 2.3 in their first two terms in the major will be placed on departmental probation. Majors who have an average below 2.3 in their economics courses at the end of their third regular term in the major will be dropped from the major.

Minor Requirements

The minor program in economics requires 15 credits: ECON 211, ECON 212, one of ECON 214 or ECON 239 or ECON 243, at least one of ECON 217 or ECON 227, and one elective other than ECON 213 chosen from the available offerings, provided their prerequisite (or equivalent) has been satisfied.

Course Descriptions

ECON 101 Introduction to Microeconomics 3.0; 3 cr.
An introductory survey of the principles of microeconomics, designed primarily for freshman students. Annually.

ECON 102 Introduction to Macroeconomics 3.0; 3 cr.
An introductory survey of the principles of microeconomics, designed primarily for freshman students. Annually.

ECON 203 Survey of Economics 3.0; 3 cr.
Elementary principles of microeconomics and macroeconomics and applications. Students majoring in economics cannot receive credit for ECON 203. Students who take ECON 203 may not receive credit for either ECON 211 or ECON 212. Every term.

ECON 211 Elementary Microeconomic Theory 3.0; 3 cr.
General principles of microeconomics; includes elements of supply and demand, consumer behavior, costs, market structures, and income distribution. Students cannot receive credit for both ECON 211 and AGSC 212; however, the courses will not be treated as equivalent. Students cannot receive credit for ECON 211 and AGSC 212. Every term.

ECON 212 Elementary Macroeconomic Theory 3.0; 3 cr.
General principles of macroeconomics; aggregate supply and demand framework is used to analyze overall movements in prices and national output, inflation and unemployment, and monetary and fiscal policies. Students cannot receive credit for both ECON 203 and ECON 212. Every term.

ECON 213 Economic Statistics I 3.0; 3 cr.

Display of data, properties of probability, methods of enumeration, conditional probability and independent events; univariate and bivariate distributions corresponding to both discrete and continuous variables; expectation, variance, covariance and correlation, moment generating functions, independent random samples and the central limit theorem; basics of confidence intervals and hypothesis testing. Pre- or Co-requisite: MATH 201. Equivalent course: STAT 230. Students can get credit for only one of BUSS 200, ECON 213, EDUC 227, STAT 201, STAT 210, or STAT 230. Every term.

ECON 214 Economic Statistics and Econometrics 3.1; 3 cr.

Classical linear regression model and the multiple regression model in matrix form; estimation methods (OLS, MLE, MME); properties of estimators; multicollinearity, serial correlation, heteroskedasticity; causal inference; binary and limited response dependent variables. Prerequisites: ECON 211 or ECON 212, ECON 213 or STAT 230, and MATH 201. Corequisite: MATH 218 or MATH 219. Every term.

ECON 215 Applied Econometrics 2.2; 3 cr.

A comprehensive treatment of advanced econometric techniques applied in cross-sectional, time series, and panel data models. Topics include but are not limited to instrumental variable approach; regression discontinuity design; fixed effect models; difference-in-differences; validation tests; time trends and seasonality; stationarity and unit root problem; VAR; and cointegration. Prerequisite: ECON 214. Every term.

ECON 217 Intermediate Microeconomics 3.0; 3 cr.

Theory of allocation of resources; consumers' choice and classical demand theory, exchange and welfare; theory of production and cost; price and output determination under alternative market structures; game theory and applications to oligopoly. Prerequisites: ECON 211 and MATH 201. Every term.

ECON 218 Behavioral Economics 3.0; 3 cr.

This course is a continuation of Intermediate Microeconomics and offers an introduction to behavioral and experimental economics. It uses neo-classical economics as a benchmark from which psychologically informed models are derived. The course covers the foundations of individual behavior in economics under certainty and uncertainty, the paradoxes of choice, and alternative choice models. It also examines the elements of experimental economics including auctions, bargaining, and simulated markets and the elements of behavioral game theory such as public goods games, dictator games, and ultimatum games.

ECON 219 Economics of Financial Markets 3.0; 3 cr.

A survey of capital markets and asset pricing models; determination of the links between financial markets monetary policy, and economic growth. Prerequisite: ECON 227. Annually.

ECON 221 History of Economic Thought 3.0; 3 cr.

A survey of the history of economic thought, both theory and policy, with an emphasis on contemporary economic thought. Prerequisite: ECON 217 or ECON 227, or consent of instructor. Annually.

ECON 222 Labor Economics 3.0; 3 cr.

A survey of the demand for and supply of labor, investment in human capital, market structure and efficiency of labor markets, collective bargaining, income distribution, and unemployment. Prerequisite: ECON 217. Annually.

ECON 223 Economics of the Middle East 3.0; 3 cr.

A study of the resource endowment of the Arab Middle Eastern economies; their development experience, and the general outlook for growth and development. Prerequisites: ECON 217 or ECON 227, ECON 211 and ECON 212. Occasionally.

ECON 226 Public Economics 3.0; 3 cr.

Introduction on the nature and the role of governments in the economy. This course covers market failure and government intervention, government failure and public choice, economic analysis of public policy, inequality and tax policy. Prerequisite: ECON 217. Annually.

ECON 227 Intermediate Macroeconomics 3.0; 3 cr.

A study of the aggregate approach to economics, including the determination of output, employment, interest rates, and the price level. Inflation and stabilization policies, budget deficits and the national debt, business cycles, theories of consumption, and investment behavior. Prerequisites: ECON 211, ECON 212, and MATH 201. Corequisite: MATH 202. Every term.

ECON 228 Monetary Economics 3.0; 3 cr.

Central banking and instruments of monetary management, alternative theories of the demand for money, the balance of payments and the processes of its adjustment. Prerequisite: ECON 227. Annually.

ECON 230 Economic History 3.0; 3 cr.

Economic development of Europe and other areas up to 1914, with special emphasis on a number of distinct problems in different countries and historical periods. Prerequisites: ECON 217 or ECON 227, ECON 211 and ECON 212. Occasionally.

ECON 232 The Economics of Institutions 3.0; 3 cr.

This course will examine the role played by institutions and political economy considerations in determining overall economic performance. The course aims to describe the role and evolution of institutions in economic growth, to understand basic models of politics, and to provide an introduction to the dynamic effects of fiscal and monetary policy. By the end of the course, students should be able to understand the role of institutional failure, models of governance and mis-governance, optimal fiscal policy, and the concepts of reputation, credibility, and time inconsistency. Prerequisites: ECON 227.

ECON 235 International Trade 3.0; 3 cr.

Classical trade model, the Heckscher-Ohlin theorem and subsequent theoretical developments, tariffs, domestic distortions, customs union, trade, and economic growth. Prerequisite: ECON 217. Annually.

ECON 236 International Finance 3.0; 3 cr.

A study of macroeconomic equilibrium in an open economy. Topics covered include the interpretation of the national accounts, exchange rate determination, monetary policy in an open economy under fixed and floating exchange rates, balance of payments crises and contagion, and a historical perspective of the international monetary systems. Prerequisites: ECON 217 and ECON 227. Annually.

ECON 237 Economic Development I 3.0; 3 cr.

An introduction to development economics that covers the theory and empirics of development, quality of life, poverty, inequality, and knowledge-based policy making in the context of the challenges faced by developing countries including market-oriented reforms, impact of globalization, urbanization, agricultural development, and gender equality. Prerequisite: ECON 217 or ECON 227. Annually.

ECON 239 Introduction to Mathematical Economics 3.0; 3 cr.

Linear algebra, single variable optimization, multi-variable optimization, and constrained optimization- basic theoretical concepts and practical applications- with an emphasis on the use of general functional forms and on comparative statics and with several examples drawn from the economics of uncertainty. Prerequisite: ECON 217. Annually.

ECON 240 Economic Development II 3.0; 3 cr.

Models of economic development and growth; macroeconomic planning; policy formulation and implementation in developing countries. Prerequisite: ECON 227. Annually.

ECON 241 Industrial Organization 3.0; 3 cr.

Application of microeconomics; analysis of factors affecting market structure, conduct and firm behavior in imperfectly competitive industries; survey of theories relating to intensity of competition and maintenance of market dominance; rationale for antitrust laws. Prerequisite: ECON 217. Annually.

ECON 242 Energy Economics 3.0; 3 cr.

This course introduces key aspects of major energy markets including oil, natural gas, coal, electricity, nuclear power, and renewable energy. It focuses on building economic models to analyze the various energy markets and uses these models to explore taxes and social welfare, government regulation and deregulation, public policy, and externalities. Prerequisite: ECON 217. Occasionally.

ECON 243 Introduction to Game Theory and Economic Behavior 3.0; 3 cr.

Basic concepts and methods of game theory with applications to economic problems, Nash equilibrium, mixed strategies, zero sum games, repeated games. Prerequisite: ECON 217. Annually.

ECON 290 Special Topics in Economics (A,B,C...) 3.0; 3 cr.

May be repeated for credit on different topics. Prerequisite: Junior or senior standing. Annually.

ECON 295 Senior Seminars in Economics 3.0; 3 cr.

Senior Seminars in Economics.

36 Credits in Economics (21 + 15)

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Economics and Societies and Individuals (21+15+3+3)	Understanding the World (6), Quantitative Reasoning (9)	Community-Engaged Learning (3)
Lecture Courses (9+12+42 +6+12)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required economics courses (18): ECON 211(3), 212(3), 213(3), 214(3) [P213], 215, [P214], 217(3) [P211, 212], 227(3) [P211, 212] Five elective economics courses from the following and/or seminar courses (15): ECON [P214] 218(3) [P217] 219(3) [P214, P227], 221(3) [P217, P227], 222(3) [P217] 223(3) [P221, P212], 226(3) [P217], 228(3) [P227],230(3) [P211, P212], 232(3) [P227] 235(3) [P217], 236(3) [P217, P227], 237(3) [P217], 239(3) [P217], 240(3) [P227], 241(3) [P217], 242(3) [P217], 243(3) [P217], 290(3) and 295(3). Required business course (3): ACCT 210(3)	Understanding the World electives (6) Required mathematics courses: MATH 201(3), 202(3) [P201], 218(3) or 219(3) and CMPS 209 or CMPS 201 (3) or CMPS 203	Required (3)

			One Societies and Individuals course must be an approved General Education course from outside the major		
Laboratory (0)					
Research project (0)					

Department of Education

Chairperson:	Karami Akkary, Rima R.
Professors:	BouJaoude, Saouma B.; Ghaith, Ghazi M.; Khamis, Vivian E.
Associate Professors:	Al-Hroub, Anies M.; Amin, Tamer G.; Baytiyeh, Hoda M.; El Hassan, Karma; El-Mouhayar, Rabih R.; Karami-Akkary, Rima R.; Khishfe, Rola F.
Assistant Professor	Khalil, Lina
Lecturers:	Bou Zeineddine, Amal R.; El-Khatib, Lara; Hout, Hanin; Karameh, Jinan.; Mouawad, Rim; Osman, Enja; Shukri Balaa, Rola
Instructors	Jouni, Nidal

The Department of Education offers programs at both the undergraduate and graduate levels. The undergraduate level program leads to a Bachelor of Arts degree in Education/Elementary. The post-BA/BS Diploma Program leads to a Teaching Diploma, Diploma in Special Education, or Diploma in Educational Management and Leadership. Students can also complete the Diploma program concurrently with a relevant BA/BS degree. The graduate program leads to a Master of Arts degree in Education.

BA in Education/Elementary

Mission Statement

The Bachelor of Arts in Education/Elementary Program aims at developing students' knowledge base for teaching and competence in professional practice as well as promoting a commitment to personal professional development and active participation in the professional community. Through fulfillment of coursework, field-based experiences, and professional community service activities, students are prepared to enter the field of teaching and/or graduate studies in education as reflective practitioners, literate in information and communication technology, and critical thinkers committed to the human and moral values of lifelong learning, integrity, innovation, civic responsibility, and leadership.

BA Program

The BA program is based on various conceptualizations of teacher preparation programs and contemporary international best practices and trends, and is aligned with international standards. The program prepares all students for both homeroom and subject matter teaching, the latter concentration (Language Arts/Social Studies, Mathematics/Science and Art/Music) being the student's choice. The program is structured developmentally where course offerings are scheduled by year, distributed over the sophomore, junior and senior years. The developmental distribution is based on core common courses and methodology-practicum courses.

The bachelor's degree in Elementary Education aims at developing:

- professional understanding of children and their learning needs at the elementary level,
- theoretical understanding and practical skills in homeroom and subject matter teaching,
- broad-based competencies in methods and techniques of teachin to meet learning needs,
- adequate knowledge of subject matter taught in elementary schools.

Degree Requirements

The program for the BA in Education/Elementary is based on the completion of at least 90 credits as follows:

- University General Education Requirements (39 cr.), with 9 cr. of the 39 cr. must be Education courses
  - Cultures and Histories (9 cr.)
  - Human Values (3 cr.): At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA.
  - ENGL 203 (3cr.), ENGL 204 (3cr.); and ARAB Communication Skills Course (3 cr.)
  - Societies and Individuals (6 cr.): One Course (3 cr.) must be an approved General Education course from outside the major and one course (3 cr.) from the major.
  - Understanding the World (6 cr.): one course (3 cr.) must be an approved General Education course from outside the major and one course (3 cr.) from the major.
  - Quantitative Reasoning (3 cr.) Students are required to take at least a total of 9 cr. from Understanding the World and Quantitative Reasoning with at least 3 cr. from each
  - Community Engaged Learning (3 cr.)
  - At least one of the GE or major courses should cover the theme of Social Inequalities.
- Education Requirements (45 cr.)
  - Core Education Courses (24 cr.): EDUC 211 or EDUC 216, EDUC 215, EDUC 217, EDUC 219, EDUC 221, EDUC 223 or EDUC 225, EDUC 231, EDUC 232
  - Methods Courses (9 cr.): EDUC 233, One of the following pairs: EDUC 228 and EDUC 229 (art and music) [currently frozen], EDUC 245 and EDUC 251 (language arts, English or Arabic, and social studies); or EDUC 252 and EDUC 257 (math and science)
  - Seminar (3 cr.): EDUC 291
  - Practicum courses (9 cr.): EDUC 268A, EDUC 268B and EDUC 268C or EDUC 268D
- Subject Matter Courses (12 cr.)
  - Specialization Courses (9 cr.): These are from 200 and above. They include EDUC 218 and one course in each of mathematics and science. Special mathematics and science courses designed for teaching in the elementary school are offered by the department (EDUC 271, EDUC 272, EDUC 273,

and EDUC 274) and must be taken to fulfill this requirement.
  - Electives within Subject Matter (3 cr.): 3 credits in art or music
- General Electives (3 cr.)

Minors in Education

The department offers three minors with the aim of providing students with a comprehensive understanding of the psychological, philosophical, administrative, and professional foundations of education.

1. Minor in Educational Psychology (15 credits)

The Educational Psychology minor is designed to allow students from many disciplines to explore child, adolescent, and adult development, concerns, and opportunities. Coursework includes consideration of the dynamics of learning and motivation in school settings, introduces major topics, issues, and trends in special education. In addition, the coursework will provide students with the knowledge and skills needed to the application of theories and principles of development, learning, memory, motivation, individual differences, instruction, school guidance and counseling, classroom management, and measurement and evaluation. To complete a minor in Educational Psychology, students must take the following:

- EDUC 215 Learning and Human Development
- EDUC 221 Introduction to Special Education.
- EDUC 223 Introduction to Guidance and Counseling
- EDUC 217 Measurement and Evaluation for Classroom Teachers
- EDUC 280 Behavior Modification and Classroom Management or
  EDUC 232 Classroom Management in the Elementary School

2. Minor in Educational Administration and Policy

The minor in educational administration and policy is suitable for students interested in exploring education from an administrative and policy perspective to contribute to the improvement of educational systems. It is especially relevant for non-education students pursuing research-focused master's degrees in educational administration and policy studies. The Minor in Educational Administration and Policy offers students a foundational understanding of educational systems, laws, policies, effective leadership organizational change and instructional strategies. It also allows them to explore the role of schools in society and the impact of culture, diversity, and social factors on education. To complete a minor in Educational Administration and Policy, students must take the following:

- EDUC 211 The School and the Social Order
- EDUC 212 Educational Laws and Policies
- EDUC 213 Introduction to Educational Administration
- EDUC 215 Learning and Human Development or EDUC 225 Child
  and Adolescent Development
- EDUC 230 Instructional Strategies

3. Minor in STEAM Education

STEAM stands for Science, Technology, Engineering, Arts and Mathematics. This minor in STEAM Education provides students from a variety of different disciplines in the natural sciences, mathematical and computer sciences, social sciences, or humanities with an introduction to the field of education, by leveraging their interests in their respective fields. The

minor also highlights how instruction can cut across and integrate across traditional school disciplines. To complete a minor in STEAM Education, students must take the following:

- EDUC 230 Instructional Procedures
- EDUC 220 Instructional Media and Techniques
- EDUC 273 Science for Elementary Teachers I
- EDUC 218 Children's Literature or EDUC 231 Reading Instruction in the Elementary School
- EDUC 271 Problem Solving in Arithmetic and Algebra or EDUC 272 Problem Solving in Probability, Statistics and Geometry

BA in Education

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Economics and Societies and Individuals**	**Subject Matter**	**Understanding the World (6), Quantitative Reasoning (9:3/6+3/6)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+57 +6+3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values Elective (3): Art or Music	Required Education courses (30 cr.): EDUC 211(3) or EDUC 216(3); 215 (3), 217 (3); 219(3); 221(3); 223(3) or 225(3); 230(3); 231(3); 232(3)	Required courses (9 cr.)*	Required Understanding the World courses (6 cr.) from the approved General Education courses; one from outside the Department	EDUC 268A, EDUC 268B, EDUC 268C or EDUC 268D

			One Societies and Individuals course must be an approved General Education course from outside the major General Elective(3 cr.)		Required Quantitative Reasoning courses (3 cr.) from the approved General Education courses	
Seminar (3)			EDUC 291(3)			
Laboratory/ Research Project (18)			One pair of: EDUC 245/251 (6); 252 /257 (6); 228/229 (6) EDUC 233 (3) EDUC 268A (3) EDUC 268B (3) EDUC 268C or EDUC 268D (3)			

*Subject Matter Courses (9 cr.)

- EDUC 218 (3)
- 6 credits in mathematics and science: one in mathematics (EDUC 271) and one in the sciences (EDUC 273)

Diploma Programs

Teaching Diploma Programs

Students enrolled for a Bachelor and Diploma/Teaching Diploma must satisfy the full requirements of both degrees and complete at least a total of 111 credits. The Teaching Diploma Program prepares students to become elementary and secondary schoolteachers. This requires specialization in a subject matter area that can be completed before or during professional preparation in the Department of Education. The program is comprised of a total of 21 credit hours in education. This preparation culminates in a teaching diploma that qualifies a student to teach at either the elementary or the secondary level.

Teaching Diploma in Elementary Education

Education Course Requirements

- EDUC 215
- EDUC 231
- EDUC 232
- Elective
- For students concentrating on Homeroom Teaching: EDUC 233, 268A, 268B
- For students concentrating on teaching Language Arts, English or Arabic, and Social Studies: EDUC 245, 251, 268C
- For students concentrating on teaching Mathematics and Science: EDUC 252, 257, 268D

Subject Matter Requirements

These include 24 credit hours in courses numbered 200 or above distributed over two subject matter areas from the following combinations: a) Arabic and social studies, b) art and music, c) English and social studies, and d) mathematics and science. The mathematics and science courses offered by the Department of Education (EDUC 271, EDUC 272, EDUC 273, EDUC 274) may be considered to satisfy part of the subject matter requirement in mathematics and science. EDUC 218 may be used to satisfy part of the subject matter requirements for language arts concentrations (Arabic–social studies and English–social studies).

Teaching Diploma in Secondary Education

Education Course Requirements

- EDUC 211 or 216
- EDUC 215
- EDUC 230
- Two methods courses from the sequence EDUC 237-256 plus one relevant course from the sequence EDUC 261-269
- An elective in education

Subject Matter Requirements

Students must complete the requirements for a bachelor's degree in a subject matter area taught in elementary and/or secondary schools before they are granted this diploma. These areas include Arabic, English, health, informatics, math, science, and social studies. In case of a shift in major, students are required to complete a minimum of 24 credit-hours in the new subject matter area in courses numbered 200 or above.

NOTE: Only courses that are in areas taught in intermediate and secondary schools qualify for subject matter courses for the purposes of the Teaching Diploma.

Methods Courses

Methods courses at the secondary level are subject matter oriented; i.e., they deal with teaching a subject matter that has been chosen by the student as a major field of specialization. The distribution is as follows:

EDUC 237, EDUC 238	Theories and Methods of Health Education
EDUC 241, EDUC 242	Teaching of Arabic
EDUC 243, EDUC 244	Teaching of English as a Foreign Language
EDUC 246, EDUC 248	Informatics Education
EDUC 249, EDUC 250	Teaching of Social Studies
EDUC 253, EDUC 254	Teaching of Math
EDUC 255, EDUC 256	Teaching of Sciences

In the case of students who are actual teachers in a recognized school, special arrangements may be made with the instructors of the methods courses to adjust field experience components in courses such as methods courses and practicum.

Admission to the Teaching Diploma Programs

New students should obtain an application from the Office of Admissions and apply as new students. Applications are reviewed by the department and, when accepted, students are classified as special students working for the teaching diploma. Completion of the bachelor's degree is a requirement for admission of new students to the teaching diploma programs. AUB students working for their bachelor's degree at AUB should complete a form no later than the first semester in their Junior year informing the Department of Education of their intent to complete the requirements for a diploma. Once notified the Department of Education will assign the students an academic advisor to help them generate a study plan to fulfill their diploma requirements.

Qualifications for the Teaching Diploma and Official Recognition by the Lebanese Government

Teaching Diploma in Elementary Education

Students qualify for the teaching diploma upon completion of the program of study as detailed above, attaining a cumulative average of 2.3 or above in its courses, and receiving the recommendation of the Department of Education. To receive an official recognition of the Teaching Diploma as equivalent to the License d'Enseignement in elementary education, the candidate should meet the following:

- holds the Baccalaureate Part II or equivalent,
- has completed the diploma requirements with 21 term credits in the field of education over and above the total number required for a bachelor's degree.
- and has completed a minimum of 45 term credits in the field of education.

Teaching Diploma in Secondary Education

Students qualify for the teaching diploma upon completion of the program of study as detailed above, attaining a cumulative average of 2.3 or above in its courses, and receiving the recommendation of the Department of Education. To receive an official recognition of the Teaching Diploma as equivalent to the License d'Enseignement in education the candidate should meet the following:

- holds the Baccalaureate Part II or equivalent,
- has a bachelor's degree in a subject taught at the secondary level (Arabic, English, informatics, mathematics, science, and social studies),
- and has completed the diploma requirements (21 term credits in the field of education) over and above the total number required for a bachelor's degree.

Diploma in Special Education

The special education diploma program is a 21-credit program designed to help students develop the skills, knowledge, and values needed to specialize in the teaching of children and youth with special educational needs with an emphasis on mild and high incidence exceptionalities: Learning Disabilities (LD) or Giftedness and Talent (G&T). Collaboration and consultation skills will be the cornerstone of the program.

Track One: Learning Disabilities

The Learning Disabilities (LD) track is designed to serve the needs of four groups: (1) Teachers who plan to participate in teaching students with learning disabilities in their schools in Lebanon or other Arab countries, (2) teachers who want to learn how to accommodate the weaknesses of LD students in their regular classrooms or other educational settings, (3) trainee teachers employed in non-school settings who want to know how to work with children and youth with learning disabilities, and (4) parents interested in the education of students with learning disabilities. The 21-credit program is designed to develop awareness, positive attitudes, and understanding about teaching students with learning disabilities, as well as competence in curriculum development, delivery, and evaluation.

Track Two: Gifted and Talented Education

The Gifted and Talented Education track is designed to serve the needs of four groups: (1) Teachers who plan to participate in the education of identified gifted and talented students in their schools in Lebanon or elsewhere in the Arab world, (2) teachers who want to learn how to accommodate the unique needs of gifted and talented students in their regular classrooms, (3) trainee teachers employed in non-school settings who want to know how to work with gifted and talented children and youth, and (4) parents interested in gifted and talented education. The 21-credit program is designed to develop awareness, positive attitudes, and understanding about teaching gifted and talented students, as well as competence in curriculum development, delivery, and evaluation. For admission to Special Education Diploma, students can enroll concurrently in a bachelor program or after completing the bachelor's degree. It is preferable if the student's undergraduate major is in education or in psychology, but students with other undergraduate majors may be considered. For successful completion of the program, students should achieve at least a cumulative average of 2.3. The program is composed of the following courses:

Table: Two Tracks of Emphasis in Special Education: Learning Disabilities (LD) or Gifted and Talented (G&T)

	Track 1: LD Emphasis Area		**Track 2: G&T Emphasis Area**	
Requirements	**Course**	**Course Field & term Hours**	**Course**	**Course Field & term Hours**
Core Courses	EDUC 215 EDUC 221 EDUC 222	3.0; 3 cr. 3.0; 3 cr. 3.0; 3 cr.	EDUC 215 EDUC 221 EDUC 222	3.0; 3 cr. 3.0; 3 cr. 3.0; 3 cr.
Method Courses (Area of Specialty)	EDUC 280 EDUC 281	2.2; 3 cr. 5.2; 6 cr.	EDUC 280 EDUC 282	2.2; 3 cr. 5.2; 6 cr.
	EDUC 283A	0.6; 3 cr.	EDUC 283B	0.6; 3 cr.
	Total	**21 cr.**	**Total**	**21 cr.**

Students can choose to pursue both areas of concentration, thereby completing a total of 30 credits.

Requirements (21 cr.)

- Basic Courses (9 cr.): EDUC 215, EDUC 221, and EDUC 280
- Methods Courses (12 cr.): EDUC 222, EDUC 281 or EDUC 282, and EDUC 283A or EDUC 283B

Diploma in Educational Management and Leadership

The purpose of this diploma is to provide knowledge and practical training in the areas of educational management and leadership. Holders of this diploma are prepared to become managers of schools and educational training institutions and programs.

Requirements	
EDUC 211 or EDUC 216	EDUC 224
EDUC 212	EDUC 226
EDUC 213	EDUC 230
EDUC 214	

For admission to diploma in Educational Management and Leadership, students can enroll concurrently in a bachelor program or after completing the bachelor's degree. A minimum of one year of relevant professional experience in an educational setting is preferred. Students qualify for the Diploma in Educational Management and Leadership upon recommendation from the department and completion of the specified program of study with a cumulative average of 2.3 or above.

Course Descriptions

EDUC 211 The School and the Social Order 3.0; 3 cr.
A course on the importance of teaching as a profession in the larger context of social and cultural change; the manner in which teaching can influence the nature and direction of change; contrasts between advanced and developing countries. Annually.

EDUC 212 Educational Laws and Policies 3.0; 3 cr.
A course on the educational laws that govern public and private schools, including policies related to various educational levels, certification and equivalency issues, government approval, syllabi, book authorship, examinations, and educational plans. Annually.

EDUC 213 Introduction to Educational Administration 3.0; 3 cr.
A survey of various aspects of educational administration, with emphasis on leadership theories and organizational structure, functions, and responsibilities of educational administrators, and public control of education. Annually.

EDUC 215 Learning and Human Development 3.0; 3 cr.
An introduction to instructional theory, the nature of intelligence, child development, learning and behavior management, with an emphasis on the basic implications for classroom teaching. Annually.

EDUC 216 Philosophy of Education 3.0; 3 cr.
A review of the development of educational thought as expressed in the writings and ideas of major philosophers. This review endeavors to deal with thought in the context of the historical times. Arab thought is included. Annually.

EDUC 217 Measurement and Evaluation for Classroom Teachers 3.0; 3 cr.
An introduction to and practice in the construction, use, and interpretation of classroom tests. Prerequisite: EDUC 215. Annually.

EDUC 218 Children's Literature 3.0; 3 cr.
A study of the diverse elements of ancient and modern children's literature. Topics include poetry, fairy tales, epics, myths and legends, fantasy, fiction, and illustrated stories. The skill of using literature effectively with children is particularly stressed. Annually.

EDUC 219 The Use of Computer Applications in Education 2.2; 3 cr.

This course examines how to use technology to support teaching and learning. This course is designed to prepare students to integrate a variety of computer-based technologies into the K-12 curriculum such as Web 2.0 (blogs, wikis, google apps), spreadsheets, and slideshows implemented through lesson activities. Students can get credit for only one of CMPS 206, CMPS 209, or EDUC 219. Annually.

EDUC 220 Instructional Media and Techniques 2.2; 3 cr.

This course explores the use of Interactive White Boards (IWBs) and other interactive instructional media techniques in education. This course will equip students with knowledge and skills to create effective and interactive lessons and activities that enhance teaching and learning. Media techniques and principles are implemented through activities and projects appropriate to use for all majors. Annually.

EDUC 221 Introduction to Special Education 3.0; 3 cr.

An introduction to special education and the various categories of exceptionality, including nature, causes, educational characteristics of children with intellectual disabilities, learning disabilities, emotional and behavioral disturbance, communication disorders, visual impairment, hearing impairment, physical disabilities, autism spectrum disorder, and giftedness. Annually.

EDUC 223 Introduction to Guidance and Counseling 3.0; 3 cr.

An introduction to the field of guidance and counseling. The role of the counselor in school and community settings is emphasized. Annually.

EDUC 225 Child and Adolescent Development 3.0; 3 cr.

A chronological study of typical and atypical cognitive, linguistic, emotional, and physical development from the prenatal period through adolescence. The relative influences and interactions of heredity and environment, and the impact of development on learning and school success are examined. Students who receive credit for EDUC 225 cannot receive credit for PSYC 210. Annually.

EDUC 226 Personnel Management and Development 3.0; 3 cr.

A course on personnel policies and procedures; recruitment, salary scales, benefits, promotions and pension plans; job description and evaluation; organizing the personnel department; training and development of human resource programs in educational institutions. Annually.

EDUC 227 Statistics in Education 3.0; 3 cr.

A course on descriptive statistics, correlation, prediction, and statistical inference as applied to educational situations. Students who receive credit for this course cannot receive credit for any other introductory statistics course, such as STAT 201, STAT 210, STAT 230, MATH 233, or ECON 213. Annually.

EDUC 230 Instructional Procedures 3.0; 3 cr.

An introduction to instructional planning, teaching strategies, classroom management, and evaluation procedures. Annually.

EDUC 231 Reading Instruction in the Elementary School 3.0; 3 cr.

A course on trends, theories, and practices in the teaching and evaluation of reading in the elementary school; alternative teaching/learning strategies for developing readiness, comprehension, and evaluation of progress in reading. Annually.

EDUC 232 Classroom Management in the Elementary School 3.0; 3 cr.

This course explores classroom management concepts, terminology, approaches, and strategies. Students analyze issues related to classroom organization and governance through the use of case studies. The course presents theories of classroom management. Topics are based on behavioral modification and classroom management systems. Annually.

EDUC 247 Computer-Based Instructional Packages 2.2; 3 cr.

A course on the design and production of computer-based educational packages using multimedia and hypermedia techniques. Students are expected to use digital technology to produce applications that are deliverable through the internet, CD-ROMs, or other digital media. Annually.

EDUC 271 Problem Solving in Arithmetic and Algebra 3.0; 3 cr.

A course that focuses on using problem solving as an integral constituent of mathematics teaching in elementary and intermediate school mathematics. The purpose of the course is to support students in developing a deep understanding of mathematical concepts and procedures in arithmetic and algebra. Annually.

EDUC 272 Problem Solving in Probability, Statistics and Geometry 3.0; 3 cr.

A course that focuses on using problem solving as an integral constituent of mathematics teaching in elementary and intermediate school mathematics. The purpose of the course is to support students in developing a deep understanding of mathematical concepts and procedures in probability, statistics and geometry. Annually.

EDUC 273 Science for Elementary Teachers I 3.0; 3 cr.

An in-depth study of science concepts and skills in pre-secondary science curricula. Annually.

EDUC 274 Science for Elementary Teachers II 3.0; 3 cr.

An in-depth study of science concepts and skills in pre-secondary science curricula. Annually.

EDUC 275 Learning in and through Gaming 3.0; 3 cr.

This course examines the connections between learning and gaming. It examines what is, or can be, learned through playing computer games including physical and social concepts and historical narratives. It also examines the learning principles underlying game design. Through the course, students learn about the positive affordances of computer games but also learn to adopt a critical perspective on game content and design. Occasionally.

EDUC 290 Special Topics 1.0-3.0; 1-3 cr.

A course that deals with special issues and concerns not included in regular courses. The following examples are taken from topics given during the last few years: Music for elementary teachers, visual arts for elementary teachers, and trends in early childhood education. May be repeated for credit. Annually.

EDUC 291 Senior Seminar (Issues in Elementary Education) 3.0; 3 cr.

A seminar intended for majors in elementary education that focuses on one or more current issues in elementary education. Annually.

EDUC 292 Senior Seminar (Education in Arab Countries) 3.0; 3 cr.

A seminar intended for majors in education that focuses on educational issues in one or groups of Arab countries. Annually.

Methods Courses

EDUC 214 Management in Practice 1.4; 3 cr.

A course on managing, planning and organizing, and personnel management; supervised training at AUB and practical experiences in schools and other institutions, such as hospitals, technical institutions, colleges, and universities under the supervision of the course instructor and professional practitioners. Prerequisite: EDUC 213. Annually.

EDUC 222 Introduction to Assessment in Special Education 3.0; 3 cr.

An introduction to theory and uses of assessment techniques and instruments in special education. Emphasis is placed on educational implications for learners with special needs. Annually.

EDUC 224 Instructional Supervision 1.4; 3 cr.

Workshops in supervision methods at AUB and practical skills in schools and other educational institutions, supervised by the course instructor and professionals in the field; approaches to instructional supervision for the generalist and specialist supervisor; communicating, motivating, evaluating, and monitoring of staff and professionals; promoting individual and group development, and overseeing curriculum development. Annually.

EDUC 228 The Teaching of Art in Elementary School 2.2; 3 cr.

A course on the theory and practice in teaching visual art in the elementary school with observation and practice teaching in classrooms. Corequisite: EDUC 230. Annually.

EDUC 229 The Teaching of Music in Elementary School 2.2; 3 cr.

A course on the development of students' basic skills in music (general vocal and instruments), combined with a study of source materials in the teaching of music. This course also includes observation and practice teaching in classrooms. Corequisite: EDUC 230. Annually.

EDUC 233 Methods of Homeroom Teaching 2.2; 3 cr.

This course prepares homeroom teachers for taking overall class responsibility as well as teaching the main areas of the primary school curriculum. Topics include language arts, science, mathematics, and social studies teaching methods and activities. There is also focus on classroom organization, planning of teaching and learning, resource selection and management, and assessment and evaluation. Corequisite: EDUC 232. Annually.

EDUC 237 Theories and Methods of Health Education I 2.2; 3 cr.

An introduction to the major theories of health behavior and health promotion. Emphasis is placed on the application of health behavior theories to health promotion and education practice. Students cannot receive credit for both EDUC 237 and HCPH 237. Corequisite: EDUC 230. Annually.

EDUC 238 Theories and Methods of Health Education II 1.4; 3 cr.

An introduction to the assumptions we make about communication and key elements of the communication process. This course deals with factors that inhibit communication as well as some of the functions of communication as they relate to increasing positive health behavior and group effectiveness. This course aims at enhancing writing and oral presentation skills as well as effective interaction skills with peers and supervisors at work. Cross-listed as HCPH 203, Communication for Health Professionals. Students cannot receive credit for both EDUC 238 and HCPH 203. Prerequisite: EDUC 237. Annually.

EDUC 240 The Teaching of Arabic in Elementary Schools 2.2; 3 cr.

A course on the theory and practice in methods of teaching Arabic in elementary schools with observation and practice teaching in classrooms. Corequisite: EDUC 230. Annually.

EDUC 241 The Teaching of Arabic I 2.2; 3 cr.

A course on theory and method of teaching Arabic language and literature at the secondary level, with emphasis on new approaches. Corequisite: EDUC 230. Annually.

EDUC 242 The Teaching of Arabic II 1.3; 3 cr.

A practicum of classroom observation and supervised practice teaching of Arabic language and literacy at the secondary level. Prerequisite: EDUC 241. Annually.

EDUC 243 The Teaching of English as a Foreign Language (TEFL) I 2.2; 3 cr.

A course on theoretical background and approaches to the teaching of English as a foreign/second language; principles and techniques of teaching the basic language skills; includes classroom observation and micro teaching practices. Corequisite: EDUC 230. Annually.

EDUC 244 The Teaching of English as a Foreign Language II 1.4; 3 cr.

A course on the preparation and evaluation of teaching materials through individual and group projects; guided and supervised practice teaching in schools. Prerequisite: EDUC 243. Annually.

EDUC 245 The Teaching of Language Arts (English or Arabic) in Elementary School 2.2; 3 cr.

A course on theoretical background and approaches to the teaching of language arts (English or Arabic) in the elementary school; principles and methods of teaching the language skills; includes classroom observation and micro teaching practices. Corequisite: EDUC 232.

EDUC 246 Computer Programming at the School Level 2.2; 3 cr.

A course that explores computer programming techniques suitable for teaching Informatics and other subject matters at the school level. This course includes cognitive theoretical background and practical work. Special emphasis is placed on the use of programming as a means to promote thinking skills. Corequisite: EDUC 219 or EDUC 220. Annually.

EDUC 248 Methods for Teaching Informatics 2.2; 3 cr.

A course on concepts, trends, and skills needed to design and teach curriculum materials for informatics education; analysis and evaluation of informatics curriculum; methods and techniques of teaching informatics at the school level; includes demonstrations and observation of actual computer lab sessions. Prerequisite: EDUC 246. Annually.

EDUC 249 The Teaching of Social Studies I 2.2; 3 cr.

A course on approaches to the teaching of history, geography, and civics; adaptation of social science concepts and generalizations to the secondary level. Corequisite: EDUC 230. Annually.

EDUC 250 The Teaching of Social Studies II 1.4; 3 cr.

A practicum of classroom observation and supervised practice teaching of social science, or history, geography, and civics in neighboring schools. Prerequisite: EDUC 249. Annually.

EDUC 251 The Teaching of Social Studies in Elementary School 2.2; 3 cr.

A course on the theory and practice in methods of teaching history, geography, and civic education in elementary school, with observation and practice teaching. Corequisite: EDUC 232. Annually.

EDUC 252 The Teaching of Mathematics in Elementary School 2.2; 3 cr.

A course on the theory and practice in methods of teaching mathematics in elementary school, with observation and practice teaching. Corequisite: EDUC 232. Annually.

EDUC 253 The Teaching of Mathematics I 2.2; 3 cr.

A course on the pedagogical and mathematical basis of various approaches in mathematics teaching in middle and secondary schools; includes demonstrations, classroom observation, and applications. Corequisite: EDUC 230. Annually.

EDUC 254 The Teaching of Mathematics II 1.4; 3 cr.

An analysis and preparation of teaching/learning materials, plans, and tests for mathematics teaching, including supervised practice teaching and individual and group meetings. Prerequisite: EDUC 253. Annually.

EDUC 255 The Teaching of Science I 2.2; 3 cr.

A course on the nature of science and its implication in teaching; critical study of various science teaching techniques; survey and practice in the utilization of instructional materials. Corequisite: EDUC 230. Annually.

EDUC 256 The Teaching of Science II 1.4; 3 cr.

A review of various science curriculum projects and programs; curriculum planning, micro-teaching, and practicum in classroom observation and teaching. Prerequisite: EDUC 255. Annually.

EDUC 257 The Teaching of Science in Elementary School 2.2; 3 cr.

A course on the theory and practice in methods of teaching science in the elementary school, with observation and practice teaching. Corequisite: EDUC 232. Annually.

EDUC 261 Practicum in TEFL in Secondary School 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 243. Annually.

EDUC 262 Practicum in Teaching Math in Secondary School 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 253. Annually.

EDUC 263 Practicum in Teaching Science in Secondary School 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 255. Annually.

EDUC 264 Practicum in Health Education 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 237. Annually.

EDUC 265 Practicum in Teaching Arabic in Secondary School 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 241. Annually.

EDUC 266 Practicum in Teaching Social Studies in Secondary School 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 249. Annually.

EDUC 268A Practicum in Elementary School (Homeroom Teaching) I 0.6; 3 cr.

Application of theories and development of homeroom materials and assessment. Guided and supervised homeroom teaching in schools. Prerequisites: EDUC 232, EDUC 233. Annually.

EDUC 268B Practicum in Elementary School (Homeroom Teaching) II 0.6; 3 cr.

Observation and practice in homeroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisites: One of EDUC 233, EDUC 268A. Annually.

EDUC 268C Practicum in Elementary School (Language Arts/Social Studies) 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisites: EDUC 245, EDUC 251. Annually.

EDUC 268D Practicum in Elementary School (Mathematics/Science) 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisites: EDUC 252, EDUC 257. Annually

EDUC 269 Practicum in Teaching Informatics 0.6; 3 cr.

Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 246. Annually.

EDUC 280 Behavior Modification and Classroom Management 3.0; 3 cr.

The application and analysis of behavior change techniques with exceptional learners in various educational settings. Theories and applications of individual and group behavior management plans are emphasized. Pre- or corequisite: EDUC 215, 221 and 222. Annually.

EDUC 281 Learning Disabilities: Concepts, Identification, and Program Development 5.2; 6 cr.

Current theories, identification models and instructional practices are analyzed and implemented into newly developed and/or existing interdisciplinary units of instruction that provide differentiated learning for students with learning disabilities. Prerequisite: Either EDUC 221 or EDUC 222. Pre- or corequisite: EDUC 280. Annually.

EDUC 282 Gifted and Talented Learners: Concepts, Identification, and Program Development 5.2; 6 cr.

Current theories, identification models and instructional practices are analyzed and implemented into newly developed and/or existing interdisciplinary units of instruction that provide differentiated learning for gifted and talented students. Prerequisite: Either EDUC 221 or EDUC 222. Pre- or corequisite: EDUC 280. Annually.

EDUC 283A Practicum in Special Education 0.6; 3 cr.

Supervised teaching experience to develop and demonstrate teaching competence for children with learning disabilities. Corequisite: EDUC 281 or EDUC 282. Second term. Annually.

EDUC 283B Practicum in Special Education 0.6; 3 cr.

Supervised teaching experience to develop and demonstrate teaching competence for gifted and talented children. Corequisite: EDUC 281 or EDUC 282. Second term. Annually.

Department of English

Chairperson:	Currell, David
Professors:	Choueiri, Lina G.; Hout, Syrine C.; Mejcher-Atassi, Sonja; Myers, Robert E.; Shaaban, Kassim A.
Associate Professors:	Currell, David; Gonsalves, Joshua D.; Harb, Sirène H.; Mehmood Ali, Tariq
Assistant Professors:	Avant, Doyle R.; Dasgupta, Sreemoyee
Lecturers:	Rantisi, Rima; Sfeir, Maya
Instructors	Baalbaki, Rula

Communication Skills Program

Director of Communication Skills:	Khoury, Malakeh
Assistant Director of Communication Skills:	Fleszar, Dorota
Instructors:	Al-Sayyed, Amany; Deeb, Rima; Fleszar, Dorota; Hodeib, Heba; Iskandarani, Rima; Jaber, Nagham; Johnson, Ryan; Khoury, Malakeh; Kodeih, Rabab; Maktabi, Sawsan; Mikati, May; Moughabghab, Emma; Riman, Soha; Shadid, Rima; Sleiman, Tamara; Zreik, Hassan

Department Course Offerings

The English Department offers courses in English language, English literature, literature in translation, visual and digital culture, and creative writing. The department also offers communication skills courses which are part of the university general education requirements.

Undergraduate Degrees

The English Department offers two undergraduate degree programs: the BA in English Literature and the BA in English Language.

Degree Requirements

A BA degree in Language or Literature requires 90 credits for students entering their major as sophomores. The distribution requirements for these credits are explained in the following sections.

Major Courses

39 credits in courses listed under Literature (BA in English Literature) or Language (BA in English Language), with no more than 6 credits in the form of creative writing courses (i.e. ENGL 239, ENGL 264, ENGL 297, or courses in the range ENGL 249-254).

English Literature BA Course Requirements

The requirements

for Literature majors are as follows:

- ENGL 205 English Literature I
- ENGL 207 English Literature II
- ENGL 209 Survey of American Literature
- ENGL 212 Shakespeare
- ENGL 221 Introduction to Literary Theory
- ENGL 229 History of the English Language
- ENGL 238 Academic Writing for English Majors
- One comparative literature course chosen from ENGL 240-243
- ENGL 292 Capstone Seminar, which must be taken in the senior year
- Four additional courses chosen from among those numbered ENGL 210 to 297, excluding 293

The recommended sequence

for Literature majors is:

- ENGL 203 at the earliest opportunity
- ENGL 205, ENGL 207, ENGL 209, and ENGL 229 in the first year of study
- ENGL 221 preferably in the second year, and only after completing ENGL 203
- ENGL 238 in the immediate next term after taking ENGL 204
- ENGL 292 must be taken in the senior year

English Language BA Course Requirements

The requirements

for Language majors are as follows:

- ENGL 227 Introduction to Language
- ENGL 228 Phonetics
- ENGL 229 History of English Language
- ENGL 230 Language in Society or ENGL 232 Language Acquisition
- ENGL 238 Academic Writing for English Majors
- ENGL 231 English Grammar or ENGL 294 Special Topics in Grammar
- Three additional courses chosen from among the department's Language offerings
- ENGL 212 Shakespeare
- Two courses chosen from ENGL 205 English Literature I, ENGL 207 English Literature II and ENGL 209 Survey of American Literature
- One additional course can be chosen from among the department course offerings, including creative writing courses

Teaching Diploma Courses

Both Literature and Language majors may also take courses leading to the teaching diploma. The requirements for the teaching diploma are specified under the Department of Education catalogue section.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Electives

Both Literature and Language majors are required to take 12 credits of free electives.

Requirements for Acceptance to English BA Programs

Students wishing to major in Language or Literature are accepted provisionally until they have achieved a grade of C+ or more in ENGL 203 (Academic English) and ENGL 204 (Advanced Academic English) and in two of the four introductory courses: ENGL 205 (English Literature I), ENGL 207 (English Literature II), ENGL 209 (Survey in American Literature) and ENGL 227 (Introduction to Language). Normally, the courses may be repeated only once.

English Minors

The department offers minors in Language, Literature, Creative Writing, Translation, Theater, and Gender Studies. An American Studies minor is housed in the Center for American Studies and Research (CASAR), a Film and Visual Culture minor is housed in the Department of Media Studies, and a Gaming minor is housed in the Department of Computer Science.

A minor in Literature

requires 15 credits. Two core courses from among the following:

- ENGL 205 English Literature I
- ENGL 207 English Literature II
- ENGL 209 Survey of American Literature
- One comparative literature course from ENGL 240-243
- And any two courses from the different categories of the literature curriculum

A minor in Language

requires 15 credits:

- ENGL 227 Introduction to Language
- Four other courses chosen from the department's Language offerings

A minor in Creative Writing

requires 15 credits. Three courses chosen from the following:

- ENGL 239 Screenwriting
- ENGL 249 Fiction Writing
- ENGL 250 Poetry Writing

- ENGL 251 Playwriting
- ENGL 252 Creative Nonfiction
- ENGL 253 Cultural Writing
- ENGL 254 Special Topics in Creative Writing
- ENGL 264 Fiction Writing for Video Games

Two 200-level courses chosen from among the following: ENGL 236, any course listed under Literature but not including those specified above, and any course in creative writing offered by the Department of Arabic and Near Eastern Languages.

A minor in Translation

(in collaboration with the Department of Arabic and Near Eastern Languages) requires the following:

- ARAB 225 Translation
- ENGL 233 Introduction to Translation

Three courses chosen from the following:

- ARAB 211 Survey of Arabic Grammar
- ARAB 212 Survey of Arabic Grammar
- ARAB 226 Translation
- ARAB 227 Arabic Linguistics
- ARAB 228 Arabic Linguistics
- ENGL 221 Intro to Literary Theory
- ENGL 231 English Grammar or ENGL 294 Advanced Topics in Grammar
- One comparative literature course from ENGL 240-243.
- ENGL 247 Discourse Analysis
- ENGL 255 Literatures in Translation - any letter(s)
- ENGL 262 Advanced Topics in Translation – any letter(s)
- Any course offered by the Department of English with a significant translation studies component, with approval of the chair

A minor in Theater

requires 15 credits. One of the following options, representing 6 credits, is required:

- THTR 259 Workshop in Theater Production
- THTR 250 Workshop in Stage Directing & THTR 258 Theater Production Practices

Remaining credits may be taken from among the following courses:

- Any courses with the THTR prefix (see the full list under Theater Program)
- ARAB 240 Modern Arabic Drama
- CHLA 212 Modern and Contemporary World Theater
- ENGL 212 Shakespeare
- ENGL 216 Drama
- ENGL 251 Playwriting
- ENGL 297 Theatrics of Gaming
- Any course that significantly addresses theater, performance or dramatic literature, with approval of the chair

A minor in Gender Studies

requires 15 credits from any of the following courses:

- ENGL 234 Gender and Language
- ENGL 258 (any letter) Gender and Sexuality
- EPHD 334 Reproductive Health
- HIST 262 Gender in Classical Islamic Society
- HPCH 202 Sexuality and Public Health
- SOAN 225 Gender and Culture
- Special Topics, seminars, and/or course sections with emphases on Gender, Sexuality, and/or Women's Studies – with approval of the Chair of the Department of English

Communication Skills Course Descriptions

Please check https://www.aub.edu.lb/fas/english/Commskills/Pages/Placement.aspx for placement requirements for all Communication Skills Courses.

ENGL 100 (A & B) Intensive English Courses 0.0; 0 cr.

An integrated skills course that develops students' linguistic and communicative competence in preparation for a full-time university program. A broad range of activities and readings in various disciplines exposes students to campus culture and university-level discourse. Through regular practice in oral and written activities, students develop appropriate and effective expression in English.

ENGL 102 Enrichment Course in English 3.0; 3 cr.

This course develops critical thinking and oral and written fluency through close reading, analysis, and responses to academic texts. Special attention is given to identifying arguments and rhetorical devices as well as applying appropriate conventions of grammar, mechanics, and usage. Every term.

ENGL 203 Academic English 3.0; 3 cr.

This course introduces students to the demands of critical reading and writing college level texts. Through a recursive process of exploration, discovery, and writing, students develop ownership of texts and practice their voice to compose a documented synthesis. Every term.

ENGL 204 Advanced Academic English 3.0; 3 cr.

This course provides training in writing analyses, syntheses and critiques of advanced college-level texts. Throughout the semester, students polish their research skills by examining and evaluating different aspects of argumentation. The course culminates in an argumentative research paper. Prerequisite: ENGL 203. This course does not count toward graduation for students in MSFEA. Every term.

ENGL 206 Technical English 3.0; 3 cr.

This course immerses engineering students in the best practices of technical communication for their discipline. It focuses on making complex information accessible to different audiences while emphasizing evidence-based argumentation appropriate for specific contexts. Special attention is given to style, conventions, the recursive technical writing process, research methodology, and collaboration. Prerequisite: ENGL 203. For students in MSFEA only. Every term.

Literature Course Descriptions

ENGL 101 Introduction to Literature 3.0; 3 cr.

An introduction for freshman students to literature in English. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or ENGL 204, based on placement. Occasionally.

ENGL 103 Introduction to Drama 3.0; 3 cr.

An introduction for freshman students to drama in English. The course focuses on a selection of major playwrights from different periods. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or ENGL 204, based on placement. Occasionally.

ENGL 104 Introduction to Poetry 3.0; 3 cr.

An introduction for freshman students to poetry in English. The course focuses on a variety of authors and periods and contexts. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or ENGL 204, based on placement. Occasionally.

ENGL 105 Introduction to American Literature 3.0; 3 cr.

An introduction for freshman students to American writing from the colonial period to the present. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or ENGL 204, based on placement. Occasionally.

ENGL 106 Introduction to World Literature 3.0; 3 cr.

An introduction to non-British and non-American literatures in English. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or ENGL 204, based on placement. Occasionally.

ENGL 109 Introduction to Creative Writing 3.0; 3 cr.

An introduction to various forms of creative writing for freshman. Students will produce a portfolio of original work. Prerequisite: Freshman status; pre- or corequisite: ENGL 203 or ENGL 204, based on placement. Students may not receive credit for both ENGL 109 and ENGL 236. Occasionally.

ENGL 205 English Literature I 3.0; 3 cr.

A course that covers major literary works from the early medieval period to the late eighteenth century. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or higher, based on placement. Every term.

ENGL 207 English Literature II 3.0; 3 cr.

A course that covers major works of literature from Romanticism to the contemporary period. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or higher, based on placement. Every term.

ENGL 209 Survey of American Literature 3.0; 3 cr.

A course that covers major works of American literature and a broad range of writers. Readings may vary from term to term. Pre- or corequisite: ENGL 203 or higher, based on placement. Every term.

ENGL 210 (A, B, C, D, E...) Literature of the Middle Ages 3.0; 3 cr.

A course covering major works of medieval literature, with attention to both form and cultural context. Some attention to the original language may be given. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 211 (A, B, C, D, E...) Early Modern Literature 3.0; 3 cr.

A course that covers major works of sixteenth and seventeenth-century literature, with attention to both form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 212 Shakespeare 3.0; 3 cr.

A course that covers several representative plays by Shakespeare, with attention to form, cultural context and the theatrical practices of the period. Some attention to Shakespeare's poetry or adaptation may be given. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Every term.

ENGL 213 (A, B, C, D, E...) Neo-Classical and Romantic Age 3.0; 3 cr.

A course that covers major works of eighteenth and early nineteenth-century literature, with attention to both form and cultural contexts. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 214 (A, B, C, D, E...) Victorian Literature 3.0; 3 cr.

A course that covers major works of the Victorian period, with attention to both form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 215 (A, B, C, D, E...) Twentieth-Century Literature 3.0; 3 cr.

A course that covers major works of the twentieth century largely within the Anglophone world, with attention to both form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 216 Drama 3.0; 3 cr.

A course that covers a variety of dramatic forms from the modern and contemporary Anglophone world, with attention to form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally.

ENGL 217 The Novel 3.0; 3 cr.

A course that covers theories of the novel as well as literary examples from the eighteenth century to the present, largely in the Anglophone world, with attention to genre, form, and social context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally.

ENGL 218 Poetry 3.0; 3 cr.

A course that covers a variety of poetic forms from across all periods, largely in the Anglophone world, with attention to form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally.

ENGL 219 Film as Text 3.0; 3 cr.

A course that covers a variety of cinematic forms, with attention to both the technical components of film and to cultural context. Prerequisite: ENGL 203 or higher, based on placement. Annually.

ENGL 220 (A, B, C, D, E...) Contemporary Anglophone Literature 3.0; 3 cr.

A course that covers significant works of recent times in the Anglophone world. Readings vary from term to term, but might include settler colonial literatures, literatures of the Middle East, Africa, the Caribbean, global south, or south Asian world. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 221 Introduction to Literary Theory 3.0; 3 cr.

A course that covers significant movements in the history of literary theory, with emphasis on the application of different theoretical schools in contemporary literary and cultural analysis. Prerequisite: ENGL 203 or higher, based on placement; and English major status or permission of instructor. Every term.

ENGL 222 (A, B, C, D, E...) Literature and Cultural Studies 3.0; 3 cr.

A course that examines works of literature in relation to emergent trends in cultural studies. Approach will vary from term to term, but might include Marxism and cultural materialism, biopolitics and disability, animal studies and posthumanism. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 223 (A, B, C, D, E...) Literature and Science 3.0; 3 cr.

A course that examines literary texts, and the discipline of literature in relation to the history and various disciplines of science. Readings may vary from term to term, but might include literature and scientific research, scientific discovery, or technology. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 224 (A, B, C, D, E...) Early American Literature 3.0; 3 cr.

A course that covers pre-twentieth-century American literature, with particular emphasis on relationships between form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 225 (A, B, C, D, E...) Modern American Literature 3.0; 3 cr.

A course that covers American texts from the modern period with attention to form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 226 (A, B, C, D, E...) Contemporary American Literature 3.0; 3 cr.

A course that covers developments in contemporary American literature, with attention to form and cultural context. Readings may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 236 Creative Writing 3.0; 3 cr.

A workshop-based course in which students explore a variety of creative forms. Approach will vary from course to course, but will cover at least four genres such as fiction, nonfiction, poetry, drama, short film or graphic novel. Every term. Students may not receive credit for both ENGL 109 and ENGL 236.

ENGL 239 Screenwriting 3.0; 3 cr.

A workshop-based course that covers the artistic and technical aspects of screenwriting. Students will produce short, original screenplays. Occasionally.

ENGL 240 (A, B, C, D, E...) Literature and Empire 3.0; 3 cr.

A course that focuses on relationships between imperial formations and literary cultures in comparative historical perspective. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 241 (A, B, C, D, E...) Transnational Literatures 3.0; 3 cr.

A course featuring networks of literary texts emerging from different locales with an emphasis on historical contexts of migration, diaspora and crisis. Prerequisite: ENGL 203 or higher, based on placement Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 242 (A, B, C, D, E...) World Literature 3.0; 3 cr.

A course that covers significant texts from different origins, time periods, and genres as well as their resonance in global contexts via translation, adaptation and rewriting. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 243 (A, B, C, D, E...) Postcolonial Literature 3.0; 3 cr.

A course that examines the relationships between literature and imperialism, exploring literary and theoretical texts that have emerged in and about the global south in the era following colonization. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 244 (A, B, C, D, E...) Special Topics in Literature 3.0; 3 cr.

A course that varies in content and focuses on a topic not currently covered in the curriculum. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 249 Fiction Writing 3.0; 3 cr.

A workshop-based course that covers key elements in writing fiction. Students will produce a body of original fiction. Occasionally.

ENGL 250 Poetry Writing 3.0; 3 cr.

A workshop-based course that covers a variety of poetic styles across cultures and traditions. Students will produce a collection of original poems. Occasionally.

ENGL 251 Playwriting 3.0; 3 cr.

A workshop-based course that covers that artistic and technical aspects of playwriting. Students will write original one-act plays to be staged. Occasionally.

ENGL 252 Creative Nonfiction 3.0; 3 cr.

A workshop-based course that covers the writing of memoir, biography, reportage and reflective essays. Students will produce a collection of original works. Occasionally.

ENGL 253 Cultural Writing 3.0; 3 cr.

A workshop-based course that covers cultural writing as a form of creative prose. Students will produce a collection of original reviews of performance and the literary arts. Occasionally.

ENGL 254 Special Topics in Creative Writing 3.0; 3 cr.

A course that varies in content and focuses on a topic not currently covered in the creative writing curriculum. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 255 (A, B, C, D, E...) Literatures in Translation 3.0; 3 cr.

A course focusing on a body of literature in English translation, with particular focus on form and cultural context. Approach may vary from term to term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 256 (A, B, C, D, E...) Digital Culture 3.0; 3 cr.

A course that covers elements of digital culture and emergent means of analysis. Approach will vary from term to term, but might include digital storytelling, text mining, augmented reality, electronic literature, spatial analysis or new media. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 257 (A, B, C, D, E...) Visual Culture 3.0; 3 cr.

A course that explores the relations between literature and emergent trends in visual culture. Materials may vary from term to term, but might include film, television, web series, photographic narrative, performance art and video art. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 258 (A, B, C, D, E...) Gender and Sexuality 3.0; 3 cr.

A course that examines works of literature in relation to contemporary theories of gender and sexuality. Emphases will vary from term to term, but may include third world feminisms, queer and post-queer theory, affect theory, rhetorics of the body, and new materialist approaches. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 259 (A, B, C, D, E...) Topics in Rhetoric 3.0; 3 cr.

A course that explores the history of rhetoric, rhetorical theory, and rhetoric's linkages with other discourses--from literary studies and linguistics to politics, social theory, visual culture, and digital and other media. Readings will draw upon both western and non-western traditions, with emphasis varying by term. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 260 (A, B, C, D, E...) Topics in Composition 3.0; 3 cr.

A course that focuses on theories of reading and writing and on the teaching of writing. From individual acts of composing to the academic discipline of composition studies, readings examine how writing happens and how it can be taught. With topics varying by term, the course makes connections to scholarship in language, literary studies, and education. Prerequisite: ENGL 203 or higher, based on placement. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 261 (A, B, C, D, E...) Advanced Literary Theory 3.0; 3 cr.

A course that covers a particular theorist or theoretical problem in literary and cultural studies. Topics may vary from term to term, but might include investigations of disciplinary power and biopolitics, contemporary theories of sovereignty and the camp, theories of the event, philosophy and set theory, or theories of virtuality and embodiment. Prerequisite: ENGL 221 or consent of instructor. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 263 Tutoring Writing 3.0; 3 cr.

A course that explores current issues in writing center theory and practice. Students gain insight into the writing process and hands-on practice with the act of peer tutoring. Prerequisite: ENGL 203. Every term.

ENGL 264 Fiction Writing for Video Games 3.0; 3 cr.

A workshop-based course which covers key elements in the writing of stories for video games. Students will produce a body of original narrative. Prerequisite: consent of instructor. Occasionally.

ENGL 290 (A, B, C, D, E...) Tutorial 3 cr.

Directed reading and discussion in a selected topic in literature or language, along with the writing of assigned papers. Prerequisite: An average of 3.2 (or 80) or above in the major. Offered on demand. May be repeated for credit.

ENGL 292 Capstone Seminar for Literature Majors 3.0; 3 cr.

A writing-intensive course for majors that culminates in a research orientated project. Topics and approaches will vary depending on the instructor. Prerequisite: Senior standing. Annually.

ENGL 297 The Theatrics of Gaming 3.0; 3 cr.

A workshop-based course which covers key elements in the intersection of theatre and video games. Students will produce a body of original narrative. Prerequisite: consent of instructor. Occasionally.

BA in English Literature: 39 Credits in English

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9),** **Human Values (3)**	**Societies and Individuals (Min.)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+54 +9+3)	Required Arabic course (3) Required English courses (3 or 6, based on placement): ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits and 3 credits Human Values Required English literature courses (18): ENGL 205, 207,209 ,212, 221; one comparative literature course chosen from ENGL 240-243 Required English language courses (3): ENGL 229 Electives (12): four courses from among those numbered ENGL 210 to 297, excluding 293	Electives General Education (min. 6)	Understanding the World Electives (min. 6) Quantitative Thought Electives General Education (min. 3)	Required (3)
Seminar/ Workshop (3)		Required Writing for Majors (3): ENGL 238			
Research Project (3)		Required Capstone Course (3): ENGL 292			

Language Program

Mission Statement

The mission of the BA program in Language is to promote a multifaceted view of language. The program provides students with a foundational understanding of the principles and issues within current approaches to language and introduces them to various aspects of the structure, use, and learning of language, with a focus on English. Through teaching and mentoring, the program encourages the students to apply their analytical skills to their experience outside the classroom, and prepares them for employment in areas such as English language teaching and publishing, and for the pursuit of advanced degrees in linguistics.

Language Course Descriptions

ENGL 107 Language and Culture 3.0; 3 cr.

An examination of the complex relation between language and culture. The course deals with ways in which language reflects and shapes culture. Topics include: human vs. non-human communication, linguistic relativity, cross-cultural pragmatics, etc. Occasionally.

ENGL 108 Beginning Translation 3.0; 3 cr.

An introduction to Arabic-English-Arabic translation. Students develop their translation skills by translating texts in various genres. Occasionally.

ENGL 227 Introduction to Language 3.0; 3 cr.

A general introduction to the study of language structure and use. Students familiarize themselves with methods of linguistic analysis, which they apply to English and other languages. Every term.

ENGL 228 Phonetics 3.0; 3 cr.

A study of the articulatory, auditory, and acoustic features of sounds from a variety of languages. The practical component of this course involves practice in transcription and production of sounds. Annually.

ENGL 229 History of the English Language 3.0; 3 cr.

An introduction to the cultural and linguistic history of the English language in a global context. The course covers the historical evolution of the English language, attempts at standardizing English and its contact with other languages, as well as the contexts of its twenty-first century expansion. Annually.

ENGL 230 Language in Society 3.0; 3 cr.

An examination of the social factors that influence and shape language variation. This course investigates how language is used in both ordinary and formal social exchanges. Topics include multilingualism and language choice, regional and social variations and language attitudes. Occasionally.

ENGL 231 English Grammar 3.0; 3 cr.

A study of grammar through exploration and analysis. The course introduces students to the concepts and arguments used to describe and understand word and sentence structures of English. Occasionally.

ENGL 232 Language Acquisition 3.0; 3 cr.

An introduction to first and second language acquisition. The course highlights topics such as contexts of learning, learner characteristics, universals of language acquisition and the nature-nurture debate. Occasionally.

ENGL 233 Introduction to Translation 3.0; 3 cr.

An introduction to translation theories and practices. The course offers hands-on opportunities to practice translation between Arabic and English. Pre- or co-requisite: ENGL 203 or higher. Every term.

ENGL 234 Language and Gender 3.0; 3 cr.

An introduction to the large body of literature on language and gender, with focus on current issues in gender studies from a linguistic perspective. Students examine how language in use mediates and is mediated by the social construction of gender identities. Occasionally.

ENGL 235 Politics of Language 3.0; 3 cr.

An examination of the connection between language and power. This course explores the relationship between language and the indexing, creation and maintenance of power relationships. Topics include standard and non-standard varieties, accented speech and language ideologies. Occasionally.

ENGL 238 Academic Writing for English Majors 3.0; 3 cr.

A course for English majors that covers methods and practices of reading, writing, and research specific to the study of language and literature. Attention is placed on analytical thinking, critical reading, and persuasive writing at an advanced level appropriate to the discipline. Prerequisite: English major status and ENGL 204, or consent of instructor. Every term.

ENGL 245 Assessing Language Proficiency 3.0; 3 cr.

An introduction to the theory and practice of foreign/second language assessment. The course considers reasons to assess language skills, what exactly is assessable, and how a fair assessment can be made. The social and political implications of assessment policy are investigated. Occasionally.

ENGL 246 Applied Linguistics 3.0; 3 cr.

A course that focuses on the areas of society where language plays a vital role. It studies the application of linguistic theories, concepts and research in solving practical problems. Topics covered include language policy and planning, issues in communication, language literacy, translingualism, critical discourse analysis, and language ideology. Occasionally.

ENGL 247 Discourse Analysis 3.0; 3 cr.

An introduction to the study of spoken and written texts to understand their meanings. The course considers the relationship between a text and its social and cultural context, and how language is used to present different perspectives on the world and to construct different identities. Occasionally.

ENGL 248 Special Topics in English Language 3.0; 3 cr.

This course changes in content from year to year and focuses on varied topics in English language. May be repeated for credit. Occasionally.

ENGL 262 (A, B, C, D, E...) Advanced Topics in Translation 3.0; 3 cr.

A course that examines in depth a specific topic of translation using texts of significant cultural value. Texts will vary each term, and course work will be done in consideration of theories of translation, form and cultural context. Co- or prerequisite: ARAB 201 or equivalent, Prerequisites: ENGL 108 or ENGL 233, or consent of instructor. Occasionally. May be repeated for credit for a maximum of 6 credits.

ENGL 290 (A, B, C, D, E...) Tutorial 3 cr.

Directed reading and discussion in a selected topic in literature or language, along with the writing of assigned papers. Prerequisite: An average of 80 or above in the major. Offered on demand. May be repeated for credit for a maximum of 6 credits.

ENGL 293 Seminar for English Majors in Language 3.0; 3 cr.

Topics vary depending on the instructor. Prerequisite: Senior standing. Occasionally.

ENGL 294 (A, B, C, D, E...) Advanced Topics in Grammar 3.0; 3 cr.

In-depth study of advanced topics in grammar, such as grammar in context, grammar and discourse, or grammar as science. May be repeated for credit for a maximum of 6 credits. Occasionally.

BA in English Language: 39 Credits in English

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (Min. 6)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+48 +6+9+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits and 3 credits Human Values Electives (3) Required English language (15): ENGL 227, 228, 229, 230 or 232, 294, or 231 Required English literature (9): ENGL 212, two courses chosen from ENGL 205, 207 and 209 Electives (12): one literature and three language courses from those numbered ENGL 210 to 291, 294	Electives General Education (min. 6)	Understanding the World Electives (min. 6) Quantitative Thought Electives General Education (min. 3)	Required course (3)

Seminar/ Workshop (3)		Elective English: ENGL 236, 239, 249, 250, 251, 252 (formerly 237), 293, 294			
Laboratory (6)		Required English (3): ENGL 238			
Research (6)		Required English (9): ENGL 212, 227, 228, 230			

Theater Program

Courses in theater may be taken towards the Minor in Theater (described above) and/or in fulfilment of other degree requirements.

THTR 100 Discovering Theater 3.0; 3cr.
An introductory course to the art and craft of theater designed to enhance students' enjoyment and understanding of live theater and develop proper theater etiquette. It requires students to watch all off-campus local productions available during the term. Occasionally.

THTR 200 Introduction to Theater 3.0; 3 cr.
An introductory course covering the functions of various theater personnel, a brief survey of the history of theater starting with the classical Greek drama, various types of modern and contemporary dramatic movements, and Arab and Lebanese theater practices. Annually.

THTR 210 Theater History 3.0; 3 cr.
An overview of theater and related entertainment from ancient to modern times. Acting, production, stages, spectacle, audience control, and presentation styles are covered and illustrated with slides, videos, and anecdotes. Occasionally.

THTR 218 Special Topics in Theater History and Dramatic Literature 3.0; 3 cr.
Specialized courses in theater history and dramatic literature, such as Elizabethan Drama, African American Drama, Middle Eastern Theater, Arabic Drama, Contemporary Drama, etc. May be repeated for credit. Occasionally.

THTR 220 Voice and Acting in the Theater 2.2; 3 cr.
A course covering the basics of clear speaking, vocal projection, and acting. Occasionally.

THTR 221 Workshop in Stage Acting 3.0; 3 cr.
An introductory course to the art of stage acting covering a variety of acting styles and techniques from the earliest practitioners to Constantine Stanislavski, Bertolt Brecht, Sanford Meisner, Viola Spolin and Tadashi Suzuki among others. Occasionally.

THTR 240 Design in Theater 2.2; 3 cr.
A course on the basics of design and drawing as applied to theater; specifically stage settings, costume design, and poster design. Occasionally.

THTR 250 Workshop in Stage Directing 3.0; 3 cr.
An introductory course to the art of stage directing focusing on the functions of the director as a storyteller, collaborator, and stager. Occasionally.

THTR 258 Theater Production Practices 2.2; 3 cr.
An introductory course on the functions of various personnel involved in the process of producing a play. Students will mount a play of their choosing on campus. Occasionally.

THTR 259 Workshop in Theater Production 2.8; 6 cr.
An introductory course on the art of theater with a survey of theatrical roles and techniques, including participation in a campus or professional production. Prerequisite: Consent of instructor. Biennially.

THTR 260 (A, B, C...) Special Topics in Theater 3.0; 3 cr.
Specialized courses in interdisciplinary theater studies such as courses in Drama Therapy, Applied Theater, Theater of the Oppressed, Theater for Education, etc. May be repeated for credit. Occasionally.

Department of Fine Arts and Art History

Chairperson:	Sadek, Walid
Professor:	Dahdah, Farès; Sadek, Walid
Associate Professor:	Esanu, Octavian
Assistant Professors:	Hammond, Joseph; Youssef, Jad
Lecturers:	Garro El Khoury, Joelle; Schell, Sarah
Instructors:	Al-Amine, Gheith; Dib, Mansour; El-Hussein, Rula; Khcheich, Rima; Maalouf, Maya; Mrad, Karen; Sabbah, Yasmina; Youssef, Shawki
Artist-in-Residence:	Kahwagi, Bassam

Mission Statement

The Department of Fine Arts and Art History educates students in the arts in all their dimensions, believing that an understanding and appreciation of this area of human endeavor is an essential element in the formation of well-rounded individuals. To that end, we offer courses in studio arts, history and theory of art, and music. Our goal is to educate students with the skills to create meaningful statements in art and equip them to deal with artworks critically, and with scholarship. The department offers three degrees: a BA in Studio Arts, a BA in Art History and an MA in Art History and Curating. The department also offers minors in Studio Arts, Art History and Music.

Studio Arts Program

The Studio Arts (SART) BA Program provides undergraduate students with a strong foundation in studio skills: drawing, painting, sculpture, printmaking, analog and digital photography, video and new technology. The SART faculty members, while trained and skilled in studio techniques, do not espouse a conventional approach to the deployment of these techniques nor do they promote in their teaching a fidelity to the traditions of art. Rather, they all develop teaching methods through the lenses of their own current practices in which the past, present, and future of art are constantly being recomposed in dynamic constellations. The SART BA Program encourages a dynamical recalling of art from within current concerns and develops in students an ability to employ a large array of knowledge and skills with a readiness to open up towards post-studio art practices. The requirement for a BA degree in studio arts is 90 credits for students entering the department at the sophomore level. The distribution of these courses is as follows:

Degree Requirements

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Free Electives Outside the Department

SART 220 and music courses in the department may be allowed 3 crs.

Major Courses

These include:

- 39 credits in Studio Arts: SART 200, SART 201, SART 202, SART 203, SART 204, SART 205, SART 206, SART 207, SART 208, SART 209, SART 221, SART 222, SART 223.
- Field Electives: 9 credits in art history and/or theory.

The minor program in Studio Arts requires 15 credits:

- 3 credits from AHIS 250, AHIS 251, AHIS 252, AHIS 284, or approved alternate.
- 12 credits chosen from SART 200, SART 201, SART 202, SART 203, SART 204, SART206, SART 207, SART 208, SART 221, SART 22 and SART 223 taken according to sequence and following prerequisites.

Course Descriptions

SART 150 Studio Arts for Freshmen 0.6; 3 cr.
This course introduces students to studio practices in drawing, painting and sculpture. The projects develop representational skills based on the observation of nature. Students are introduced to a variety of media and tutored into building a portfolio of their best work. Every term.

SART 200 Drawing 0.6; 3 cr.
This course introduces art students to the fundamentals of observational drawing through a variety of sketching techniques using wet and dry monochromatic media. Through the practice of drawing, students become aware of how we see what we see and acquire the necessary foundation for self-reflection and expression. Students are introduced to pictorial conventions and their historical context through practice and lectures. Open to all students. Annually.

SART 201 Painting I 0.6; 3 cr.
This course builds on the drawing skills acquired in the previous course and proposes the practice of painting as an investigative, expressive and conceptual tool. The introduction of color and an in-depth study of painting materials and techniques allow students to explore the stages of constructing a painting. Students engage with fundamental considerations of material surface, pictorial composition and subject matter in light of examples taken from both historical and contemporary sources. Prerequisite. SART 200 or consent of the instructor. Annually.

SART 202 Painting II 0.6; 3 cr.
This course follows Painting I, further develops students' technical abilities and knowledge and introduces them to the specific practices of key modern and contemporary painters. By exploring the challenges of painting after photography, students raise practical and theoretical questions regarding the possibilities of transforming the world through the painted image. Through a series of focused and open-ended exercises students experiment with their acquired abilities and begin to open-up their work to more complex pictorial challenges, and individual approaches in their practice. Prerequisites: SART 200 and SART 201 or consent of the instructor. Annually.

SART 203 Sculpture 0.6; 3 cr.

This course introduces students to the practice of modeling forms through the observation of nature. In a series of applied projects, students learn the modeling of forms and their organization in space. Students will practice working with clay, cardboard, wood, plaster, and other mixed materials and learn safe studio working habits. Studio practice is accompanied by lectures that historically contextualize the changing conventions of sculpture since the late 19th century. Open to all students. Annually.

SART 204 Sculpture After the Monument 0.6; 3 cr.

With the beginning of Modernism, sculpture disengages from the logic of the public monument and is overtaken by the overlapping but uneven propositions of the autonomous art object and the contradictory individual subject. In this course, students study and practice various Modernist approaches to making objects that begin with the failed late projects of August Rodin and lead towards the beginnings of Minimalism. Prerequisites: SART 203 or consent of the instructor. Annually.

SART 205 The Technological Imagination 0.6; 3 cr.

This course introduces students to new technologies and their impact on how we come to understand our place in the world. Practices of data inscription and the concomitant techniques of data accessibility and salvageability constitute a challenge to anthropocentric conceptions of existence. Through a series of applied exercises as well as theoretical readings, students are initiated into this new field wherein ideas about time, space, materiality, and the primacy of vision are challenged and transformed. Prerequisite: Studio Arts students with senior standing. Annually.

SART 206 Analog Photography 0.6; 3 cr.

This course introduces students to black & white analog photography. Through practical projects students discover the mechanical and conceptual possibilities of the camera and extend their learning in lab sessions that provide thorough darkroom experience. There will be an emphasis on planning a photograph, aperture, shutter speed, white balance, ISO, the use of natural and artificial light and the function of lenses. Open to all students. Annually.

SART 207 The Digital Image 0.6; 3 cr.

This course looks into digitality as a practice in which images are infinitely malleable, reconfigurable, and exchangeable. The pixelized matrix of all digital image making is analyzed, practiced and theorized. Critical texts in visual theory are read and discussed along with developing projects that question the construction of visual hegemonies. Prerequisites: SART 206 or consent of the instructor. Annually.

SART 208 The Moving Image 0.6; 3 cr.

This course builds on the previous two courses in analog still photography and digitality and introduces students to the moving image. Through a series of small and focused projects students are introduced to video art, the film essay, and the documentary. Experimentation with narrativity, image sourcing, appropriation and soundscaping will be encouraged. Critical visual theory of video art and film is read and discussed. Prerequisites: SART 206 and SART 207 or consent of the instructor. Annually.

SART 209 Advanced Studio Practice 0.6; 3 cr.

This course offered last in the curricular sequence of SART opens a space for students to develop a working process and build a personal proposition on a topic of their choice. The course includes opportunities for students to present their work to each other and to develop their critical writing. The course includes studio visits by practicing local and international artists. Prerequisite: Studio Arts students with senior standing. Annually.

SART 221 Painting III 0.6; 3 cr.

This course aims at applying and developing students' existing technical abilities and knowledge of image making by providing the opportunity to fully engage with the process of painting, through self-directed projects. Students will work independently, and in conversation with specific works of modern and contemporary art. Prerequisites: SART 200, SART201 and SART 202 or consent of the instructor. Annually.

SART 222 Sculpture after Sculpture 0.6; 3 cr.

This course extends the practice of sculpture into the open and overlapping fields of architecture, urbanity, landscape, and public institutions. Students will study and practice various approaches such as intervention, excavation, vandalism, non-anthropocentric scales and temporalities, the ready-made, repetition, and ephemerality to think through the discourses that structure our subjectivities and script our aesthetic and political practices. Prerequisites: SART 203, SART 204 or consent of the instructor. Annually.

SART 223 Advanced Image Making 0.6; 3 cr.

In this advanced studio course, students develop, for the duration of the semester, a self-led project situated in the rich ongoing history and imaginative interaction between the moving image and the still photograph. Studio sessions are organized around lectures, technical workshops, group reviews and visits to artists' studios. Through critical experimentation, students develop an audio-visual work informed by their studies in the previous courses SART 206, 207 and 208. Prerequisites: SART 206, SART 207 and SART 208 or consent of the instructor. Annually.

SART 220 (A, B, C...) Special Topics in Studio Arts 0.6; 3 cr.

Specialized courses in studio arts. The enrolled student is required to produce artworks and an essay in critical analysis. Prerequisite: Consent of the instructor. Annually.

Art History Program

The Art History program seeks to train student's skills and concepts needed for research, teaching, and curating. It offers a core program with flexibility in the choice of art history concentrations in various periods and areas, notably the Middle East. The requirement for a BA degree in art history is 90 credits for students entering the department at the sophomore level. The distribution of these courses is as follows:

Degree Requirements

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Elective Requirements

These requirements are any one course (3 cr.) from the following group: PHIL 217, GRDS 331, SOAN 250, ARCH 017, or equivalent.

Free Electives Outside the Department

Music courses in the department may be allowed.

9 cr. (12 cr. for students exempt from the Arabic requirement)

Major Courses

The major courses include 39 credits in the department as follows:

- AHIS 203 or AHIS 204, AHIS 208, and AHIS 207 or AHIS 209, AHIS 210
- AHIS 224, AHIS 251, and AHIS 252
- AHIS 284 and AHIS 285
- Four further courses in Art History, of these, a maximum of two Studio Arts courses may be taken to replace up to two Art History courses

The minor program in Art History requires 15 credits:

- 6 credits chosen from AHIS 203, AHIS 207, AHIS 208, AHIS 209, AHIS 210, or equivalents
- 6 credits chosen from AHIS 221, AHIS 224, AHIS 225, AHIS 226, AHIS 227, AHIS 249, AHIS 263, AHIS 281
- 3 credits from AHIS 250, AHIS 251, AHIS 252, AHIS 284, or approved alternate

Course Descriptions

AHIS 150 Introduction to Art History for Freshmen 3.0; 3 cr.

A course that offers a fundamental overview of art and its development in the Western world, providing the students with a chronology and brief description of the main art periods and movements in the West starting from prehistoric art all the way to contemporary art. Every term.

AHIS 160 Introduction to the History of Photography for Freshmen 3.0; 3 cr.

This course offers a chronological overview of the history of photography and the moving image in the Western world from the nineteenth century until the present. Photographers from Lebanon and the region will also be covered. Occasionally.

AHIS 203 Ancient Mediterranean Art 3.0; 3cr.

This is a chronological examination of major Mediterranean empires taking students from Ancient Egypt to the fall of the western Roman Empire in the late 5th century CE. It aims to introduce students to a wide range of cultures of the ancient world and the role that the visual arts played in society, politics and the formation of their worldviews. Equivalent: ARCH 121.

AHIS 204 Medieval Art 3.0; 3 cr.

This course examines the political, religious and social contexts of art and architecture in the European Middle Ages (c. 500-1400 CE). It considers artistic and cultural shifts after Rome, image as knowledge, migration, conflict, and artistic exchange across Europe and beyond.

AHIS 207 Early Islamic Art and Architecture 3.0; 3 cr.

This course explores the social, political, and cultural developments and changes of art and the built environment of the early Islamic period, from the foundation of Islam during the 7th

century until the mid-13th century. The regions covered in this course include the Middle East, North Africa, Anatolia, Iran, Central Asia, and parts of South Asia. Occasionally.

AHIS 208 Renaissance Art 3.0; 3 cr.

A study of Renaissance art and architecture in Western Europe c.1300 - c.1600. The course covers a variety of influential works, their historical contexts and ways to understand them. Annually.

AHIS 209 Ottomans, Mughals, and Safavids 3.0; 3 cr.

This course explores the art, architecture, and urban culture of the Ottoman Turks, the Safavids of Iran and the Mughals of India, or the "gunpowder empires," which dominated the Middle East and South Asia during the newly globalizing era of the early modern period. Occasionally.

AHIS 210 Enlightenment and Art 3.0; 3 cr.

The course covers the art and architecture of the long eighteenth-century (c. 1650-1830s), with a focus on the relationship of the ideas and philosophies of the Enlightenment and visual culture. It examines the emergence of cultural institutions such as academies, galleries and museums in parallel with new forms and methods of scholarship and philosophy. It will cover the Grand Tour, Neo-Classicism, colonialism, revolution and the romantics. Equivalent: ARCH 122.

AHIS 221 Modern Art and Culture 3.0; 3 cr.

This course covers the late nineteenth century to the 1960s. Artworks will be examined in relationship to their historical and cultural contexts, including contemporary art criticism, reception, and artists' writing. Equivalent: ARCH 223.

AHIS 224 Islamic Art and Modernity 3.0; 3 cr.

This course explores the debates surrounding the historiography of art and architecture that were developing during the nineteenth century in key urban centers in the Islamic world including Beirut, Istanbul, Cairo, and Tehran. Occasionally.

AHIS 225 Art Now 3.0; 3 cr.

This course looks at contemporary art, as it is being produced, diffused and consumed in the present, while questioning what constitutes the present we live in historically, politically and ideologically. Annually.

AHIS 226 Art After the Lebanese Wars 3.0; 3 cr.

The course is an introduction to a number of conceptual and documentary artistic practices in the political context of Lebanon over the last two decades. Occasionally.

AHIS 227 Sound in Visual Culture 3.0; 3 cr.

The course attempts to outline and unpack the rich premise of sonic and aural cultures through art, music, the voice, the soundtrack, radio, as well as other media, within a critical framework. Occasionally.

AHIS 230 Portraiture 3.0; 3 cr.

The course examines the genre of portraiture using examples from across art history to the present day, including social media. It asks what constitutes a genre, what is portraiture, what are its functions for those that make it and within our society. The course aims to bring historical and theoretical lessons to understand individuality, identity, subjectivity, self-presentation and likeness. All periods in art history may form part of the discussions. (Formerly AHIS 249F)

AHIS 249 (A, B, C...) Special Topics in Art History 3.0; 3 cr.
Specialized courses in art history. Occasionally.

AHIS 250 (A, B, C...) Special Topics in Art Theory 3.0; 3 cr.
Specialized courses in art theory. Prerequisite: At least one previous Art History course (or equivalent) or one Special Topics in Art History course or consent of the instructor. Occasionally.

AHIS 251 Theories of Modern Art 3.0; 3 cr.
This course examines the conceptual and theoretical development of modernity and modernism, and its implications for art from the mid-nineteenth to the mid-twentieth centuries. Modernism, the avant-garde and realism as aesthetic regimes form the main framework of theoretical examination.

AHIS 252 Contemporary Art and Theory 3.0; 3 cr.
The course considers the historical and theoretical interrelations between contemporaneity and contemporary art since the end of WWII. The course addresses the ways in which art production, reception and interpretation have undergone drastic transformations against the background of broader historical changes and theoretical paradigm shifts. Annually.

AHIS 261 Methods in Art History 3.0; 3cr.
A study in the tradition and methodology of art historical research. This pursues a discussion of the work of major theorists who have structured the discipline of art history; it includes theories of the evolution of art, iconography, and art criticism. Students will be expected to discuss, analyze, and write about course readings on a weekly basis. Occasionally.

AHIS 262 Seeing Rude and Erudite; Thinking the Visible We See 3.0; 3 cr.
The introductory course approaches visuality by positing a lingering and generative difference between what we see and how we see; between what seems like a transparent access to the world and the representational systems by which the world is made available and accessible to seeing subjects who receive it and evaluate its images. Occasionally.

AHIS 263 Art and Labor 3.0; 3 cr.
This seminar-style interdisciplinary course draws theories and methodologies from art theory, philosophy, critical theory and social and political thought to investigate the question of artistic labor as well as the artwork as a product labor. The question of labor in the artwork is discussed in relation to social labor, and the way in which it both coincides and diverts from the latter. Students will be expected to discuss, analyze, and write about course readings on a weekly basis. Occasionally.

AHIS 281 Collecting and Exhibiting Islamic Art 3.0; 3 cr.
This seminar-style course takes a historiographical and theoretical approach to representations of Islamic art in museums, collections, and universal expositions/ fairs across Europe, the US and the Middle East. Students will be expected to discuss, analyze, and write about course readings on a weekly basis. Occasionally.

AHIS 282 Fighting Words: Criticism and Contemporary Art 3.0; 3 cr.
This writing-intensive, workshop-style seminar delves into the relationship between criticism and contemporary art. It does so by producing the former as a means of defining, disassembling, and/or defending the latter. Prerequisite: ENGL 204. Occasionally.

AHIS 283 History of Art Criticism 3.0; 3 cr.

This is a survey of the history of art criticism, from the advent of the artist profile in sixteenth-century Italy to the appearance of poet- and painter-critics in nineteenth-century France and the rise of journal manifestos in mid-twentieth-century Egypt and Morocco. Occasionally.

AHIS 284 History and Theory of Exhibitions 2.2; 3 cr.

The course introduces students to the history of exhibition-making practices since the 19th century. It focuses on the historical and theoretical reevaluation of those exhibitions that had a major impact upon the way art history is written. The course also introduces students to theoretical approaches to curating art exhibitions. Any two of the following are prerequisites: AHIS 221, AHIS 222, AHIS 224, AHIS 225, AHIS 226, AHIS 251, AHIS 252, AHIS 262, AHIS 282, AHIS 283, or approved alternate. Annually.

AHIS 285 Practices of Curating 2.2; 3 cr.

The course offers a hands-on experience in organizing art exhibitions and related events. Students conduct curatorial research and implement their ideas practically, from writing curatorial concepts to selecting artworks and designing exhibitions at the AUB Art Galleries. Prerequisite: AHIS 284. Annually in the Spring.

Music Program

The minor program in Music seeks to train students in skills and concepts needed to develop as musicians and enhance their capacities as performers, analysts, and audience members. It offers the fundamentals of higher education in music, seeking to balance historical, theoretical, and performance aspects.

The minor program in Music requires 15 credits:

- 6 credits from MUSC 220, 221, 230, 235, 239, 250
- 6 credits from MUSC 200, 205, 231,
- 3 credits from MUSC 262, 263, 265, 266, 269.

Course Descriptions

MUSC 150 Introduction to Western Music History for Freshmen 3.0; 3 cr.

A course that will introduce students to examining music through a critical lens emphasizing the social and cultural context of the music.

MUSC 200 Notation, Analysis and Audiation 3.0; 3 cr.

This course covers musical analysis and audiation as the foundation for comprehension, performance, and creativity in music. It covers the western system of musical notation, including rhythm and the organization of pitches. The course will train students to audiate, sight-sing and write music, to give them the tools to read, perform and analyze music and develop their musicality. Every term.

MUSC 205 Harmony, Form and Composition 3.0; 3 cr.

This course explores western musical harmony, forms and styles. It will include voice leading, functional harmony and harmonic structures. Students will learn how to analyze compositions, with reference to their historic context and traditions, and will practice the fundamentals of composition by writing short pieces in various forms and styles. Prerequisites: MUSC 200, or consent of Instructor. Fall.

MUSC 220 History of Western Music: Medieval to Classical 3.0; 3 cr.

A history of western music from antiquity through the 17th century. It studies the coeval developments of musical technologies, institutions, practices and theories of music, as well as forms, styles and genres in historical and social contexts. Covering the influence of ancient thought, religious and court music, the emergence of polyphony and notation, opera, ballet, orchestras and public concerts. Students will develop a knowledge of musical history, and practice historical and musical analysis through close listening to performances. Fall.

MUSC 221 History of Western Music: Classical to Contemporary 3.0; 3 cr.

A history of western music from c. 1700 to the present. The course includes the development of new systems of patronage and funding, new institutions (such as conservatories and public concert halls) alongside the impact of technologies (such as printing, recording, and electronic and digital tools). Through historical study and close listening students will develop an understanding of music in the west among contemporary debates about its significance and role, and the forms and styles of genres and performances. Spring.

MUSC 230 History of Opera 3.0; 3 cr.

A survey of the history and development of opera from 1598 to the present. Emphasis is placed on the analysis and evaluation of recorded opera performances on film.

MUSC 231 (A, B, C,...) Special Topics in Music Theories 3.0; 3 cr.

Specialized courses in music theories, such as western and non-western musical systems, aesthetics, critical theories and philosophical approaches.

MUSC 235 History of Jazz 3.0; 3 cr.

An investigation of the whole range of jazz history, from its beginning around the turn of the century to the present day.

MUSC 239 (A, B, C, ...) Special Topics in Music History 3.0; 3 cr.

Specialized courses in music history.

MUSC 250 History of Arabic and Middle Eastern Music 3.0; 3 cr.

A course introducing students to the history and key characteristics of Arabic and Middle Eastern music. No previous musical knowledge is required. While the class will be taught in English, it is highly recommended that students have a working knowledge of Arabic prior to taking the course.

MUSC 262 Arabic Music Ensemble 3.0; 3 cr.

Rehearsal and performance in ensemble of Arabic repertoire.

MUSC 263 Western Music Ensemble 3.0; 3 cr.

Rehearsal and performance in instrumental and vocal ensembles. Students will also discover a wide range of music literature, understand the repertoire and learn about the historical stylistic practices of pieces and how to execute them in the performance.

MUSC 265 Western Voice Performance 3.0; 3 cr.

A course on the fundamentals of singing technique and performance, including breath management, vocal registration, musical notation, and song repertoire.

MUSC 266 Arabic Voice Performance 3.0; 3 cr.
A course on the fundamentals of classical Arabic voice performance. Students will be expected to sing in class both in groups as well as alone.

MUSC 269 (A, B, C, ...) Special Topics in Music Performance 3.0, 3 cr.
Specialized courses in music performance.

BA in Studio Arts

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (Min. 6)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+39 3+6+3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values 6 credits required from Field Electives: 9 crs. of AHIS courses	Two approved General Education courses numbered 200 or above (6 credits)	Two approved General Education courses numbered 200 or above (6 credits) One approved Quantitative Reasoning General Education elective (3 credits)	Required course (3)
Studio Work (39)		SART 200, SART 201, SART 202, SART 203, SART 204, SART 205, SART 206, SART 207, SART 208, SART 209t, SART 221, SART 222, SART 223			
Lecture/Performance: Free electives from outside the department (3 crs.) can include SART 220 and FAAH/Music courses even though these are within the department					

BA in Art History

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (Min. 6)	Understanding the World, Quantitative Reasoning (9:3/6+3/6)	Community-Engaged Learning (3)
Lecture Courses (9+36+6 +6+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	9 credits required in the Cultures and Histories and 3 credits in Human Values. 18 credits including: AHIS 203, AHIS 204, AHIS 208, AHIS 221 or AHIS 252, AHIS 284 3 credits from AHIS 251, AHIS 261, AHIS 262 3 credits from AHIS 207, AHIS 209, AHIS 224, AHIS 281	Two approved General Education courses numbered 200 or above (6 credits)	Two approved understanding the world General Education courses numbered 200 or above (6 credits) One approved Quantitative Reasoning General Education course (3 credits)	Required course (3)
Lecture/ Laboratory (15)		15 credits from additional courses in Art History. Of these up to 6 credits may be from Studio Arts			
Lecture/Performance: Free electives from outside the department (12 crs.) can include FAAH/Music courses even though these are within the department					

Department of History and Archaeology

Chairperson:	Sader, Helene S.
Professor Emerita:	Seeden, Helga
Professor Emeritus:	Seikaly, Samir
Professors:	Cheikh, Nadia; Genz, Hermann P.; Sader, Helene S.; Saliba, George
Associate Professors:	Armstrong, Lyall; Newson, Paul G.
Associate Professor of Practice:	Panayot, Nadine
Assistant Professors:	Abuhusayn, Tarek; Ketsemanian, Varak; Kitlas, Peter; Malleson, Claire; Rabah, Makram
Lecturers:	Nurpetlian, Jack A; Raad, Naseem

The department offers programs leading to the BA, MA, and PhD in Arab and Middle Eastern History. The department also offers programs leading to the BA and MA in Archaeology.

The department also offers academic minors for undergraduate students in History and in Archaeology. In addition, in association with the departments of Biology and Geology, the department offers an interdisciplinary minor in Marine Sciences and Culture.

Requirements for transfer to the department include approval by the department and a grade of C+ or more in any two Culture and Histories courses (excluding the communication skills requirements in Arabic and English). Students expecting to work in Arab and Middle Eastern history must have knowledge of Arabic.

History

Mission Statement

By means of a broad and diversified curriculum, our undergraduate program introduces students to the richness and complexity of Arab and Middle Eastern history. This program is intended to develop not only essential knowledge of the past, but also awareness of the methodological and theoretical problematics involved in the study of history as a discipline in the humanities. Students are motivated to be reflexive, read, research and write critically, analytically, and without prejudice or preconceptions. Courses in European and American history supplement the core offerings, fostering a comparative understanding of the enduring relevance of the past in multiple contexts. In line with the faculty's mission, the program maintains major and minor flexible requirements, leaving room for students to explore other fields of study.

BA in History

Students majoring in history must complete a minimum of 39 credit hours in the department, including HIST 286, HIST 287, HIST 291, and HIST 292. Detailed programs are determined by subcommittees of the department, which advise each student on courses in her/his major, related departments, and electives.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Minor in History

Students choosing to minor in history must complete five courses numbered 200 and above. All minors, especially those considering graduate work in history, are encouraged to take HIST 287 as one of the five courses.

Course Descriptions

HIST 101 History of Early Modern Europe, 1492-1815 3.0; 3 cr. (each)

A chronological and topical survey of the political and socio-economic forces that have shaped early modern Europe and the rest of the world, including the voyages of discovery, the development of a global economy, the Enlightenment, the American Revolution, the French Revolution, and the downfall of Napoleon. Attention is given to teaching students how to tackle historical problems and how to initiate and conduct research. Open to freshman students only. Annually.

HIST 102 History of Modern Europe, 1815-1945 3.0; 3 cr.

A chronological and topical survey of the political and socio-economic forces that have shaped modern Europe and the rest of the world, including the development of ideologies, the advent of imperialism, World War I, the great depression, and the rise of totalitarian regimes and World War II. Attention is given to teaching students how to tackle historical problems and how to initiate and conduct research. Open to freshman students only. Annually.

HIST 103 History of the Arabs and the Middle East I: Seventh to Fifteenth Centuries 3.0; 3 cr.

This course surveys the history of the societies and polities of the Arabs, from the seventh to the end of the fifteenth century. The course will emphasize the contributions of the Arabs and other people in the Middle East to Islamic civilization. The transformation and variety of the societies that comprise this civilization over nine centuries will be illustrated through the use of narrative texts and selected primary sources.

HIST 104 History of the Arabs and the Middle East II: Sixteenth to Twentieth Century 3.0; 3 cr.

This course surveys the history of the societies and polities of the Arabs from the Ottoman conquests of the early sixteenth century to the twentieth century. The course will focus on the following periods and themes: the expansion of the Ottoman empire (16th century); the global crisis of the 17th century; the era of the notables (18th century); the age of revolutions and reform (19th century); European colonial penetration of the region (19th century/20th century); and the period of decolonization and globalization (20th century).

HIST 200 Introduction to the History of the United States 3.0; 3 cr.

An introductory survey of the social and political development of the United States from its colonial origins through the early twentieth century. Principal themes include European settlement of the North American continent and the establishment of an independent United States; the tensions between North and South that culminated in civil war; and the social

transformations brought about by the rise of a market-oriented, industrial society. Open to freshman students. Annually.

HIST 201 Introduction to the Study of History 3.0; 3 cr.

An introduction to some of the main themes and problems of the study of history such as the structures, aims, and methods of historical writing, and related questions such as causation, periodization, and style. The readings in this course are drawn mostly from modern texts in the methodology of history. Annually.

HIST 202 Introduction to the Modern History of the Arab East 3.0; 3 cr.

An introduction to the modern history of the Arab East from the Ottoman conquest until the outbreak of the Arab revolt. This course also uses case studies relating to the rise of local Arab rule and to Arab-Turkish relations in the late Ottoman period. Annually.

HIST 210 Late Antiquity: Faith and Empire 3.0; 3 cr.

This course traces the histories of the Roman and Persian empires and the emergence of the Arab Muslim empire in Late Antiquity, from approximately 300 A.D.-700 A.D., focusing particularly on the Mediterranean World and the Near East and on the role of faith (Christian, Zoroastrian and Islamic) played in the ideological foundations of these empires. Alternate years.

HIST 211 Muhammad and the Origins of Islam 3.0; 3 cr.

An examination of the life of the Prophet of Islam, Muhammad b. ʻAbd Allāh b. ʻAbd al- Muttalib al-Hāshimī. The course analyzes source material for the life of the Prophet, including biographical literature, hadith and the Qur'an and its interpretation. By evaluating these primary sources, the course assesses the historicity and the evolution of the biographical material on the life of the Prophet. Alternate years.

HIST 212 Islamic History: Origins and Empire, 600–750 3.0; 3 cr.

A course that focuses on the origins of Islam in Arabia, Islamic expansion, internal divisions, and the establishment of the Umayyad dynasty. This course emphasizes the themes of Arab expansion and adaptation, the historical roots of Shiism, institutional developments, problems of societal integration, and the factors of decline. Alternate years.

HIST 213 Islamic History: The Rise and Fall of the Abbasids, 750–1055 3.0; 3 cr.

A survey of the Abbasid Caliphate from its establishment in 750 to the Seljuk take- over of Baghdad in 1055. This course studies the origins, interpretation, and results of the Abbasid revolution, the militarization of the state, the emergence of specific institutions, the process of political decentralization, and the flourishing of cultural-scientific achievements. Alternate years.

HIST 214 Islamic History: Military Society in the Middle East, 1055–1500 3.0; 3 cr.

A course that completes the three-part survey of the central lands of Islam, covering the period from the Seljuk conquest in the eleventh century until the Ottoman expansion into the Middle East at the beginning of the sixteenth century. This course traces the fusion of societies that generated a new social and political order in the region. Alternate years.

HIST 216 History of the Fatimid Imamate, 909–1171 3.0; 3 cr.

A survey of the major stages of the Fatimid polity from the turn of the tenth century to its demise at the end of the twelfth century. Major themes include the political institutions of the Fatimid state, the intellectual trends of the Fatimid movement, and the social and economic ramifications of Fatimid rule. Occasionally.

HIST 217 Slaves and Soldiers: The Mamluk Sultanate, 1250–1517 3.0; 3 cr.

An investigation of the politics and society of Egypt and Syria during the regime of the Mamluk Sultanate by means of a chronological and thematic survey of the period from 1250 to 1517. Using all sources available—historical, archaeological, literary—students investigate the origins and nature of the Mamluk institution and its impact on society and politics in the Middle East. Alternate years.

HIST 218 The Abbasid Court 3.0; 3 cr.

A course that focuses on the Abbasid court in the ninth and tenth centuries. It seeks to define the terms court and courtiers within the Abbasid context and studies the structure that defined the court in a physical way, the Abbasid court culture; the role of ceremonial, the interpenetration of harem and court, and the understanding of particular functions of courtiers. Alternate years.

HIST 219 The Formation of Islamic Thought 3.0; 3 cr.

A survey of major disciplines in Islamic thought as they developed in the first four centuries of Islamic history. The course covers topics such as the compilation of the Qur'an and Qur'an interpretation, the development of hadith, the evolution of legal thinking and legal schools, political thought, theological discussions, and sectarian movements. Annually.

HIST 220 Local Histories 3.0; 3 cr.

A term-specific variety of courses that focus on provincial history and deal with the affairs, both urban and rural, of a particular region or locality. Courses may include such titles as Bilad al-Sham, 600–1097 and Rural Syria in Ottoman times. May be repeated for credit under different topics. Occasionally.

HIST 225 Byzantine Empire and Civilization, 330–900 3.0; 3 cr.

A survey of Byzantine history from the foundation of Constantinople in 330 to the end of the Iconoclast controversy and the establishment of the Macedonian dynasty in the later ninth century. Readings focus on doctrinal controversies, the reconstruction of the empire in the seventh century, and foreign relations, as well as artistic and cultural expression. Alternate years.

HIST 226 Byzantine Empire and Civilization, 900–1453 3.0; 3 cr.

A continuation of HIST 225, down to the fall of Constantinople. Topics include the encounter with the Crusades and the Italian maritime states, changes in Byzantine society, and the erosion and fragmentation of the empire in the thirteenth and fourteenth centuries. Alternate years.

HIST 227 Cultures in Contact: The Crusades 3.0; 3 cr.

A survey of the history of the Crusades from the beginning of the movement in the eleventh century until the demise of the Crusader states in the Middle East at the end of the thirteenth century. This course investigates the political and social conditions in the Levant that enabled the Crusaders' initial success and ultimate failure. Alternate years.

HIST 230 Iran: State, Society, and Religion, 1501–1722 3.0; 3 cr.

A course on the origin, expansion, and development of the Safavid state from the establishment of the dynasty as leaders of a Sufi order in the early fourteenth century until the fall of the Safavid dynasty and state in the eighteenth century. In addition to the political history of Persia during this period, this course examines the economic, social, and intellectual life in Persia under the Safavids. Occasionally.

HIST 233 History of the Arabs to 632 (in Arabic) 3.0; 3 cr.

A course that covers Arabia before the coming of Islam, explaining in some detail the history of the various Arabian kingdoms of both Southern and Western Arabia. Particular importance is attached to the study of surviving epigraphy and the historical dimensions of Jahili poetry. Occasionally.

HIST 234 History of the Arabs, 632–750 (in Arabic) 3.0; 3 cr.

A survey of the Rashidun and Umayyad period, with special emphasis on the politics and society of the Umayyad Caliphate and its place in early Arab Islamic civilization. Original texts are used in addition to modern studies. Occasionally.

HIST 235 History of the Arabs, 750–950 (in Arabic) 3.0; 3 cr.

A course that covers the first two centuries of the Abbasid Empire until the arrival of the Buyids, the first dynasty openly to take the Abbasids under their wing. This course places particular emphasis on the culture of the period as well as on Abbasid institutions of government and society. Occasionally.

HIST 236 History of the Arabs, 950–1258 (in Arabic) 3.0; 3 cr.

A course that covers Arab history from the Buyids to the Mamluks, also discussing other major dynasties such as the Seljuks, Zengids, and Ayyubids. Occasionally.

HIST 237 Ottoman State and Society, 1300–1600 3.0; 3 cr.

A course on the formation, consolidation, and expansion of the Ottoman state from its birth as a ghazi principality in northwestern Anatolia in the late thirteenth century until the end of the so-called Classical Age. This course emphasizes political and institutional developments. Alternate years.

HIST 238 Ottoman State and Society, 1600–1923 3.0; 3 cr.

A continuation of HIST 237 which traces the change and transformation of the classical Ottoman system and the responses to it. This course examines the Ottoman reform efforts from traditional reform in the seventeenth century through the Tulip Age and down to the Tanzimat (modernization) of the nineteenth century. Alternate years.

HIST 239 History of the Arab East and Egypt from 1516 to 1798 3.0; 3 cr.

A course that covers the expansion of Ottoman rule into the Arab East and the nature of Ottoman domination and its consequences. Selected case studies investigate the emergence of local Arab autonomies in the seventeenth and eighteenth centuries. Alternate years.

HIST 240 Confronting Modernity: The Arab East and Egypt from 1798 to 1920 3.0; 3 cr.

A course on the Arab provinces of the Ottoman Empire in the age of the Tanzimat, foreign intrusion into the region, and the Arab provinces' progressive incorporation into a developing global economy. Special attention is given to Egypt's bid for autonomy, the nahda and the emergence of national sentiment in the Arab provinces of the Fertile Crescent. Alternate years.

HIST 242 A Social History of the Modern Middle East: 1800–1980 3.0; 3 cr.

A course that examines the historical trajectory and character of social groups— including peasants, workers, middle and upper classes—in the 19th and 20th century Middle East. It explores how the rise of modern interventionist states has transformed everyday social life. Also, it considers the effects, characteristics, and limits of the region's integration into the world economy, and the effect of oil and inter-state warfare on state-society relations. Alternate years.

HIST 243 History of the Arab East and Egypt since 1920 3.0; 3 cr.

The course focuses on the establishment of the mandate system, and other types of western control in the region, the struggle for Arab independence and the foundation of the post-colonial interventionist state. Alternate years.

HIST 244 Sociopolitical History of Modern Iran, 1800–1989 3.0; 3 cr.

The course focuses on the interaction between various social forces and the state in modern Iran. It examines the transformation of the state from a weak 19th century patrimonial monarchy, via an autocratic monarchy, to a post-revolutionary populist hierocracy; and discusses the transformation of tribes, the clergy, merchants, the intelligentsia, peasants, and workers, throughout the modern period. Alternate years.

HIST 245 History of Lebanon from 634 to 1920 A.D. 3.0; 3 cr.

A study of the history of the regions which came to constitute Greater Lebanon. This course analyzes the factors that contributed to the development of a distinctive Lebanese identity. Annually.

HIST 251 History of North Africa and Spain in the Middle Ages 3.0; 3 cr.

A survey of North Africa and Andalusia from the Arab conquest until the eclipse of Muslim power in al-Andalus. Alternate years.

HIST 252 The Middle Ages in Europe 3.0; 3 cr.

A study of the history of the Western half of the Roman Empire during the crisis of the third century until the rise of the earliest nation states in Europe in the tenth and eleventh centuries. Occasionally.

HIST 253 History of Europe from 1350 to 1618 3.0; 3 cr.

A course that covers the transformation of Europe under the twin influences of the Renaissance and the Reformation. Attention is given to the political and socio-economic reorientations provoked by the voyages of discovery and the rise of European colonial empires. Occasionally.

HIST 254 History of Europe from 1618 to 1815 3.0; 3 cr.

A survey of the political and socio-economic evolution of Europe from the outbreak of the Thirty Years' War to the Congress of Vienna. Special attention is devoted to the rise to primacy of England and France and to the revolutionary transformations that the latter experienced. Occasionally.

HIST 255 History of Europe from 1815 to 1871 3.0; 3 cr.

A survey of the failure of the Vienna Settlement to preserve the European political status quo, the transformation of Europe under the impact of industrialization, and the emergence of dynamic new states in Italy and Germany. Occasionally.

HIST 256 World History from 1871 to 1914 3.0; 3 cr.

An examination of the socio-political and economic transformations which culminated with World War I. Attention is paid to the phenomenon of European imperialism and to the failure of the European state system and diplomacy to maintain peaceful co-existence. Occasionally.

HIST 257 The Contemporary World Since 1914 3.0; 3 cr.

A survey of the attempts to reconstruct a new world order at Versailles, the revolutionary overturn of existing orders in Russia, Italy, Germany, and China, the slide into World War II, and its aftermath. Occasionally.

HIST 258 Special Topics in History 3.0; 3 cr.

A term-specific variety of in-depth courses involving a detailed and systematic analysis of a particular topic, region, or nation. Examples of courses offered include Palestine under Mandate, Middle Eastern Monarchies, 1920-1958, Revolution in the Middle East, the Sea in History, Islamic Cities and Urbanism in the Modern Middle East. May be repeated for credit under different topics. Occasionally.

HIST 262 Women and Gender in Classical Islamic Society 3.0; 3 cr.

An investigation of the history of gender roles, perception, and experiences in the social, political, economic, and legal contexts of classical Muslim societies. Through a topical approach, emphasis is placed on the variety of Muslim women's experience. Reading material includes translations of primary sources that will be at the center of class discussions. Alternate years.

HIST 263 Islamic Cities, 600-1500 3.0; 3 cr.

An introductory survey of the development and diversity of cities in the Islamic world from the seventh century until the beginning of the sixteenth century as understood by historians and archaeologists. With some reliance on conceptual writing on urbanism, students will investigate diverse textual and material sources on the origins, forms, and functions of cities within the social, economic, and political contexts of the pre-modern Islamic world. Equivalent to AROL 263. Alternate years.

HIST 271 Race, Class, Gender: Introduction to American Social History 3.0; 3 cr.

A course that begins with the notion of how the study of the American past has been revolutionized in recent decades by social history, which focuses on the experiences of everyday people, particularly those from subordinate social groups. Employing this approach, the course looks at the lives of African-Americans, immigrant workers, and women, and shows how this alters the traditional picture of American history. Occasionally.

HIST 272 Economic History of the United States 3.0; 3 cr.

A survey of the economic life of the United States from colonial times to the present. This course examines the development of the economy and business institutions and corresponding changes in public policy and cultural life. Topics addressed include the colonial economy within the mercantilist system, the economics of slavery, industrialization, the rise of large corporations, government regulation, the Great Depression, the recent decline of traditional manufacturing, and the emergence of a high-technology, service-oriented economy. Occasionally.

HIST 273 The United States and the Middle East 3.0; 3 cr.

An examination of the varying and complex relationship between the United States and the Middle East over the last two centuries. Subjects examined include images of the Middle East in early American political discourse, the activities of American missionaries and the founding of AUB, Arab immigration to the US, the role of American oil companies in the region and the rise of OPEC, Cold War diplomacy toward the Arab states and Israel, the Iran hostage crisis, US intervention in the conflict in Lebanon, and the Gulf War. Occasionally.

HIST 274 The United States in the Twentieth Century 3.0; 3 cr.

A survey of the social, political, and cultural development of the United States from the early twentieth century until recent times. This course emphasizes particular episodes of domestic political reform such as the New Deal, the changing social roles of African-Americans and women, the turmoil of the 1960s and its aftermath, and the role of the United States as a world power. This course is designed as a companion course to HIST 200, although HIST 200 is not a prerequisite for HIST 274. Annually.

HIST 278/279 Special Topics in United States History 3.0; 3 cr. (each)

A course emphasizing a particular subject, theme, period, or region in the history of the United States (e.g., Native Americans, US environmental history, Civil War and Reconstruction, the American West) to be offered by resident or visiting specialists with expertise in the field. May be repeated for credit. Equivalent to AMST 215/230. Occasionally.

HIST 286 Historical Interpretation 3.0; 3 cr.

An introduction to current theoretical trends and interpretations in history and archaeology, including postmodern interpretations. Alternate years.

HIST 287 Historical Writing 3.0; 3 cr.

An applied library course focusing on the conduct of historical and archaeological research and writing. Emphasis centers on historical and archaeological methodology in the identification and utilization of sources, analysis, synthesis, and exposition. Alternate years.

HIST 291/292 Senior Seminar in Arab and Middle Eastern History 3.0; 3 cr. (each)
A seminar in which students work in association on a select topic, report on their progress in class, and incorporate their findings in a detailed paper applying recognized historical methods of referencing and documentation. Alternate years.

39 Credits in History

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (Min. 6)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Community-Engaged Learning (3)**
Lecture Courses (9+39+6 +6+3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values Nine history courses (27 cr.) from the following two categories: HIST 202, 212, 213, 214, 216, 217, 219, 220, 225, 226, 227, 230, 233, 234, 235, 236, 237, 238, 239, 240, 242, 243, 244, 245, 251, 258, 262, 263 HIST 252, 253, 254, 255, 256, 257, 259, 260, 271, 272, 273, 274, 278, 279 (no more than two courses [6 cr.] may be taken from this category)	Two courses (6) (The academic advisor will recommend particular courses in these disciplines)	Two courses (6) (The academic advisor will recommend particular courses in these disciplines One course (3) in computer literacy	Required course (3)
Seminar (6)		Required history courses: HIST 291(3), 292(3)			
Laboratory (3)				Computer Lab (3)	

Research Project (6)		Required history courses: HIST 286(3), 287(3)			

Archaeology

Mission Statement

The undergraduate program in Archaeology provides students with a working knowledge and critical understanding of the methodological and theoretical principles of archaeological investigation and fieldwork. Its curriculum introduces students to the wealth and diversity of Mediterranean and Near Eastern archaeology. In addition to developing essential knowledge about the material and cultural roots of past societies, the program enhances student awareness about the value and relevance of Lebanon's and the region's archaeological heritage. In line with the faculty's mission, the program maintains major and minor flexible requirements, enabling students to explore other areas of academic interest.

BA in Archaeology

Students majoring in archaeology must complete a minimum of 39 credit hours in the department, including HIST 286, HIST 287, AROL 233 or 234, and AROL 291 or AROL 292. Detailed programs are determined by subcommittees of the department, which advise each student on courses in her/his major, related departments, and electives.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Minor in Archaeology

Students choosing a minor in archaeology must complete five courses numbered 200 and above, including one of the following courses: AROL 211, AROL 212, AROL 233, AROL 234, AROL 291, or AROL 292.

Course Descriptions

AROL 101 Introduction to Archaeology 3.0; 3 cr.

An introductory course on how the world's archaeological resources are threatened and require rescue, protection, and management. Archaeology studies this cultural heritage and rediscovers human experience from its origins to the present. What is the nature of archaeological evidence, and how can it be saved? Every term.

AROL 201 Archaeology in Lebanon 3.0; 3 cr.

A course that presents the archaeology of Lebanon: its history, institutional organization, the state of the evidence, and the problems Lebanon's archaeological heritage is facing. Reports of the country's main excavated sites and standing monuments are studied in combination with required site visits. Alternate years.

AROL 211/212 Methodology 3.0; 3 cr. (each)
A study of the methods of recovery, systematic description, integration, and presentation of archaeological material for the preservation and reconstruction of information from the human past. Special emphasis is given to cultural heritage preservation and education in Lebanon and the Near East. Alternate years.

AROL 213 The Human Story I: The Old Stone Age (up to ca. 10,000 BC) 3.0; 3 cr.
A course on the physical and cultural evolution of hominids and early humans subsisting on food gathering, hunting, and fishing in a Pleistocene environment. The cultural and functional significance of artifacts and lifestyles are investigated with the help of information gained from the palaeoenvironment, experimental technology, and ethnography. Alternate years.

AROL 214 The Human Story II: The New Stone Age or Neolithic Period (tenth to fourth millennium BC) 3.0; 3 cr.
A course on the gradual domestication of plants and animals, leading to food production, and the development of socio-cultural systems with increasing differentiation of activities. Neolithic village communities are investigated for evidence of new technologies and arts and crafts, including exotic raw materials and luxury goods. Alternate years.

AROL 215 The Near East in the Bronze Age I (Chalcolithic and Early Bronze Age) 3.0; 3 cr.
This course focuses on the emergence of complex societies in the Near East during the fourth to third millennia BC. Key issues are the transition from a village-based to an incipient urban society, the development of social stratification, craft specialization, and international trade. Alternate years.

AROL 216 The Near East in the Bronze Age II (The Middle and Late Bronze Age) 3.0; 3 cr.
This course focuses on the development of complex urban societies in the Near East during the second millennium BC. Key issues are the development of urban communities and incipient territorial states, their incorporation into larger empires, the development of palace economies, international trade, and political relations, and the breakdown of the Bronze Age system. Alternate years.

AROL 217 Phoenicia and the Phoenicians 3.0; 3 cr.
An investigation of the archaeology of the Levantine coast between 1200 and 300 BC, with special emphasis on recently excavated Iron Age sites in Lebanon. This course examines the organization of the Phoenician city-states and their material culture. Alternate years.

AROL 218 The Phoenician Expansion in the Mediterranean 3.0; 3 cr.
A study of the Phoenician, mainly Tyrian and Sidonian, expansion in the Mediterranean, its causes, and the means by which it was achieved. This course also examines the material culture of the first millennium BC Phoenician settlements in Cyprus, North Africa, Italy, and Spain as well as cultural and economic interaction with local populations. Occasionally.

AROL 219 Ancient Mesopotamia: Sumer and Akkad 3.0; 3 cr.
A study of the major political, cultural, and technological achievements of Mesopotamian civilization from the fourth millennium BC to the fall of the Ur III Dynasty. Specific archaeological sites are chosen to illustrate the material culture of the successive historical periods from Late Uruk to Neo-Sumerian times. Occasionally.

AROL 220 Ancient Mesopotamia: Assyria and Babylonia 3.0; 3 cr.
A study of the major political, cultural, and technological achievements of Mesopotamian civilization from the second millennium BC to the fall of the Neo-Babylonian Empire. Specific archaeological sites are chosen to illustrate the material culture of the successive historical periods from the Old Babylonian/Old Assyrian period to Neo-Babylonian times. Occasionally.

AROL 221 Archaeology of the Greek World I 3.0; 3 cr. (each)

A course on the Greek Bronze and Dark Ages, covering the archaeology of Minoan Crete, the Cyclades, Helladic and Mycenaean Greece, and the development of the early Greek city-states. Alternate years.

AROL 222 Archaeology of the Greek World II 3.0; 3 cr.

A course on Archaic and Classical Greece that explores the history and archaeology of Greece, Western Asia Minor, and the Greek colonies in Southern Italy, and Sicily, from the eighth to the fourth centuries BC. Alternate years.

AROL 223 Archaeology of the Hellenistic World 3.0; 3 cr.

A course on the history and archaeology of the empire of Alexander the Great and his successors, in Greece, Asia Minor, the Near East, Iran, and beyond from the fourth to first centuries BC. This course covers the spread of Greek culture and institutions, and their interaction with local cultures. Alternate years.

AROL 224 Introduction to the Roman World 3.0; 3 cr.

An introduction to society and culture of the Roman Empire. The focus of this course is on Rome and the provinces, imperial history, everyday life, and material culture between the second century BC and the fourth century AD, with special emphasis on the first and second centuries, when the Roman Empire was at its height. Alternate years.

AROL 225 The Roman and Byzantine Near East 3.0; 3 cr.

A study of the history and material culture of the Near East, from the first century BC to the seventh century AD, including archaeological sites, religion, art, and architecture. The emphasis is on local traditions and responses to Roman rule. Alternate years.

AROL 226 The World of the Philistines, Israelites, and Aramaeans 3.0; 3 cr.

An investigation of the material culture of Syria and Palestine from 1200–300 BC, with special emphasis on the origin and early settlement of Philistines, Israelites, and Aramaeans, the formation of their states, and the processes of urbanization. Alternate years.

AROL 227 The Archaeology of Anatolia I: From the Neolithic to the Middle Bronze Age (10,000—1600 BC) 3.0; 3 cr.

The course covers the archaeology of Anatolia (modern Turkey) from the beginning of the Neolithic (ca. 10,000 BC) until the end of the Middle Bronze Age (ca. 1600 BC), with a special focus on key concepts such as the process of neolithization, the emergence of elites and craft specialists in the Early Bronze Age, and the development of international trade relations in the Middle Bronze Age. Alternate years.

AROL 228 The Archaeology of Anatolia II: The Hittites (1600-1200 BC) 3.0; 3 cr.

This course deals with the archaeology of Anatolia in the second millennium B.C. ca. 1600 to ca. 1200 BC. It discusses the rise and development of the Hittite empire, its material culture and the reasons of its collapse around 1200 BC. Special focus is on the emergence and decline of complex state societies and on the interconnection of Anatolia with the Ancient Near East. Alternate years

AROL 230 Water in a Changing World 3.0; 3 cr.

This course provides a brief introduction to the science of water, both from a geological/hydrological/environmental and from an archaeological/historical perspective. The course explores how societies in the past and in the present dealt or deal with water management issues. The course aims to provide students with the opportunity to explore water related issues with supported science and historical evidence. This course was previously offered as AROL 235AH. Students cannot receive credit for both GEOL 208 and AROL 230. Annually.

AROL 231 Ancient Near Eastern Religions 3.0; 3 cr.

A study of ancient Mesopotamian, Canaanite, and biblical religious texts with emphasis on creation myths, divine beings, death and the afterlife, cults and rituals. This course also includes a complementary investigation of archaeological evidence for religious beliefs and practices. Occasionally.

AROL 232 Animals in Archaeology 3.0; 3 cr.

This course examines the relationship between humans and animals from the Palaeolithic to the end of the Roman Period. The course answers questions such as: 1) Why, when and how did humans use animals? 2) How did animals influence and change the social and economic structures of past human societies? Important concepts such as the domestication of animals, the secondary products revolution, and the development of specialized ways of subsistence such as pastoralism and nomadism will be discussed. Occasionally.

AROL 233/234 (A, B, C...) Fieldwork in Archaeology 3.0; 3 cr. (each)

A course entailing participation in archaeological fieldwork to acquire practical experience of methods and techniques used in area surveys, excavation, building recording, post-excavation analysis, or ethnographic data collection related to archaeological fieldwork. Restricted to majors and minors in Archaeology. May be repeated for credit upon approval of the department. Annually.

AROL 235/236 Special Topics in Archaeology 3.0; 3 cr. (each)

A course on the archaeology of a particular area, region (e.g., Anatolia, the Arabian Peninsula, Egypt, Iran, etc.) or subject. Such courses are offered by resident or visiting specialists in their respective fields. May be repeated for credit. Occasionally.

AROL 237 Plants and People in the Past 3.0; 3 cr.

This course investigates the dynamic and co-dependent relationship between people and plants in the past, from the Palaeolithic to the Roman Period, based on archaeological evidence primarily from ancient Egypt, Africa and the Near East. The course will address topics relating to agriculture and land management, the economic value of plants, plant food processing technologies, nutrition and diet, production of furniture and textiles, the relationships between plants and animals in agricultural systems, and the cultural or symbolic significance of plants.

AROL 238 Origins and Growth of Agriculture 3.0; 3 cr.

This course will introduce students to the origins of agriculture in the Fertile Crescent. It focusses on the cultivation and domestication of cereals, based on archaeobotanical data from exactions at Paleolithic and Neolithic sites in the Eastern Mediterranean and Northern Euphrates regions, looking at the causes and effects of the gradual shift from gathering wild plants, to the appearance of genetically altered “domestic” cereals, and formal agricultural systems between c.25,000-6,000 years ago.

AROL 240 Introduction to Ancient Egypt 3.0; 3 cr.

This course will introduce students to the history, archaeology, art, architecture, and texts of Ancient Egypt from the Palaeolithic to the end of the New Kingdom. It discusses the origins of civilization along the Nile and rise of Egypt as a powerful nation in the region, focusing on the social and cultural developments experienced by the people of ancient Egypt.

AROL 241 Daily Life in Ancient Egypt 3.0; 3 cr.

This course will introduce students to aspects of daily life in Ancient Egypt during the pharaonic period. Students will be introduced to, and learn to assess the relative values of the rich variety of evidence for everyday activities in ancient Egypt, including private and royal funerary and religious art, archaeological evidence from settlements, tombs, and temples, and textual evidence covering administration, medicine, legal issues, religion, and personal matters.

AROL 242 Ancient Egyptian Towns 3.0; 3 cr.

This course takes an in-depth look at the rich archaeological remains of villages, towns and cities in Egypt, from Prehistory to the Roman Period. Students will be presented with a series of case studies of different sites across Egypt, based upon the most up-to-date results from excavations, looking at different types of settlements and the life within those towns and villages. The course will show the analysis of architectural remains, and the study of material culture (ancient garbage), reveal a wealth of information about the nature and structure of ancient societies – with methods that can be easily applied to help us better understand our place in our own modern world.

AROL 263 Islamic Cities, 600-1500 3.0; 3 cr.

An introductory survey of the development and diversity of cities in the Islamic world from the seventh century until the beginning of the sixteenth century as understood by historians and archaeologists. With some reliance on conceptual writing on urbanism, students will investigate diverse textual and material sources on the origins, forms, and functions of cities within the social, economic, and political contexts of the pre-modern Islamic world. Equivalent to HIST 263. Alternate years.

AROL 291/292 Senior Seminar 3.0; 3 cr.

A seminar on research methods in archaeology. Subjects include the study and identification of material culture and theoretical frameworks, or explanation in archaeology. Students are expected to research specific topics, present the results for discussion at workshop sessions, and submit their final analysis in research papers. Alternate years.

AROL 293 Ancient Texts I 3.0; 3 cr.

An introduction to West Semitic epigraphy, including the origin of the alphabet and development of alphabetic scripts as well as the presentation and comparative study of the various Semitic dialects. Occasionally.

AROL 294 Ancient Texts II 3.0; 3 cr.

Readings in a chosen ancient Semitic language (Aramaic or Phoenician). The course focuses on the grammar as well as on the transliteration of chosen texts from their original Semitic script, their translation, and their interpretation. May be repeated for credit under different topics. Occasionally.

39 Credits in History

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (Min. 6)	Understanding the World, Quantitative Reasoning (9:3/6+3/6)	Community-Engaged Learning (3)

Lecture Courses (9+39+6 +6+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values Nine archaeology courses (27 cr.) from the following: AROL 201, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 231, 232, 235, 236, 238, 240, 241 and 263	Two courses (6) (The academic advisor will recommend particular courses in these disciplines)	Two courses (6) (The academic advisor will recommend particular courses in these disciplines One course(3) in computer literacy	Required course (3)
Field Work (3)		Required archaeology course: AROL 233(3), or 234(3)			
Laboratory (3)				Computer Lab (3)	
Research Project (6)		Required history courses: HIST 286(3), 287(3)			

Minor in Marine Sciences and Culture

Students choosing to minor in the multidisciplinary Marine Sciences and Culture (MSCU) program must complete MSCU 201, MSCU 202, and MSCU 203, along with two electives chosen from any of the following: MSCU 204, MSCU 211, AROL 211, 213, 214, 215, 216, 217, 218, 221, 222, 223, 224, 225, 226, BIOL 246, 255, 266, or GEOL 201, GEOL 210, GEOL 214, and GEOL 222.

Course Descriptions

MSCU 201 Coastal and Marine Environments: Introductory Course 3.0; 3 cr.

Coastal environments and coastal systems provide a basis to explore human interaction with the sea in antiquity. This course explores how archaeologists go about investigating and recording these past activities, and introduces students to a multi-disciplinary approach that combines oceanography and archaeology to shed light on maritime history.

MSCU 202 Marine Techniques, Prospecting, and Mapping 3.0; 3 cr.

From echo sounders to bathymetry and photogrammetry, this course explores the variety of techniques and technologies that are used to investigate and document the seabed. Students will gain an understanding of the technical methodology used by oceanographers and geologists to explore maritime environments.

MSCU 203 Summer Fieldwork Course 3.0; 3 cr.
The field school, during which students will undertake fieldwork in the Mediterranean Sea, offers a range of experiences, from coastal survey and the deployment and analysis of remote sensing geophysical techniques and data, through to diver survey and the documentation of archaeological remains on the seabed.

MSCU 204 Coastal and Marine Environments: Maritime Cultural Heritage 3.0; 3 cr.
This course addresses the range of threats, whether natural or anthropic, that presently target maritime cultural heritage assets. It presents a comprehensive overview of international and national legislation related to the protection and management of the maritime cultural heritage. It also covers the application of ethnography to the maritime archaeological enquiry and reflects on how maritime communities, past and present, are an integral part of the socio-cultural heritage of a country.

MSCU 211 A history of Maritime Economics 3 cr.
The suggested course investigates maritime economies of the Mediterranean region from the Neolithic to the Roman Period based on the principles of maritime archaeology and marine sciences with a particular focus on the eastern Mediterranean such as production and distribution of goods through maritime transportation, port management, and port systems, maritime commercial networks, the exploitation of marine resources, and the relationship between ports and hinterland within the defined period of study.

Department of Mathematics

Chairperson:	Bertrand, Florian J.
Professor Emeritus:	Muwafi, Amin
Professors:	Abi-Khuzam, Faruk F.; Abu-Khuzam, Hazar M.; Khuri-Makdisi, Kamal F.; Nassif, Nabil R.; Raji, Wissam V.; Shayya, Bassam H.
Associate Professors:	Alhakim, Abbas M.; Bertrand, Florian J.; Della Sala, Giuseppe A.; El Khoury, Sabine S.; Tlas, Tamer M.
Assistant Professors:	Andrist, Rafael B.; Monni, Stefano; Moufawad, Sophie M.; Roy, Tristan Cyrus; Sabra, Ahmad A.; Taati, Siamak
Lecturers:	Mroue, Fatima K.; Yamani, Hossam A.
Instructors:	Ashkar, Alice N.; Bou Eid, Michella J.; Fleihan, Najwa S.; Itani-Hatab, Maha S.; Khachadourian, Zadour A.; Nassif, Rana G.; Rahhal, Lina A.; Tannous, Joumana A.

The Department of Mathematics offers programs leading to the degrees of Bachelor of Science (BS) and Bachelor of Arts (BA) in Mathematics, Applied Mathematics, and Statistics. It also offers programs leading to the degree of Master of Science (MS) in Mathematics.

Mission Statement

The Department of Mathematics subscribes to the view that "Mathematics as an expression of the Human mind reflects the active will, the contemplative reason, and the desire for aesthetic perfection." Through the different fields of Algebra, Analysis, Geometry, Number Theory, Statistics, and Applied Mathematics, the department aims to train students in quantitative reasoning, in dealing with abstraction, in enhancing their sense of formalism, in tackling mathematical problems, and in writing clear and rigorous proofs. The training will help the student acquire a sound balance between abstract generality and colorful individuality, and between the qualitative and quantitative aspects of Mathematics. It also will help the student master the theory through a clear comprehension of the theoretical aspects without losing sight of applications. Graduates of the Mathematics Department should be well placed to work in various professional areas of Education, Finance, Information Technology, or for pursuing graduate studies in Mathematics or a related area.

BA or BS in Mathematics

The department requires 9 credits in courses numbered 200 or above in the sciences for the BS degree, and at least 9 credits in courses numbered 200 or above in the arts Cultures and Histories or Societies and Individuals for the BA degree. In both cases, it is recommended that at least 6 of these 9 credits be in disciplines that use quantitative methods and be chosen in conjunction with the student's faculty advisor. In addition, the departmental requirements are as follows:

MATH 201, MATH 210, MATH 214, MATH 219, MATH 223, MATH 227, MATH 233, MATH 241, and at least one of MATH 220 or MATH 242, and 12 more credits chosen from MATH 202 and mathematics courses numbered 213 or above. In addition, students must take CMPS 201 or 203, which is a first course in programming. Students should note that MATH 211 and MATH 212 do not count towards the major course requirements for the BS and BA in Mathematics. For pure mathematics major, MATH 211 and/or MATH 212 may be taken as free electives.

A transfer student who has done well in MATH 218 can count it toward the mathematics major instead of MATH 219, subject to departmental approval. In such a case, the department will usually require the student to take MATH 220.

Students wishing to pursue graduate study in mathematics are strongly urged to take MATH 220, MATH 242, and MATH 213 or MATH 215. They may also want to consider taking one or more graduate course in their senior year. Students interested in high school teaching are encouraged to include MATH 202, MATH 213, MATH 251, and MATH 261 among their courses.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Minor in Mathematics

A minor in mathematics requires 18 credits which include MATH 201, MATH 210, MATH 218 or MATH 219, and 9 more credits in mathematics courses numbered MATH 202, MATH 211 or above, or statistics courses numbered STAT 230 or above.

Note: A student can opt for a minor in mathematics or a minor in applied mathematics, but not both.

BA or BS in Applied Mathematics

A student opting for the program in Applied Mathematics can earn either a BA or a BS degree. The science requirements for the BS are fulfilled by at least 2 science courses (or 6 science credits) chosen in departments in the FAS; the arts requirements for the BA are fulfilled by 2 courses (6 arts credits) chosen in departments in the FAS. The Mathematics requirement is the same for both degrees and consists of 39 credits in Mathematics courses as follows:

MATH 201, MATH 202, MATH 210, MATH 212, MATH 218 or MATH 219, MATH 223, STAT 233, MATH 251, MATH 281, at least one of MATH 224 and MATH 227, and at least 9 additional credits numbered 211 and above. These additional credits must include at least two of the following three areas:

- Analysis and Geometry: MATH 213, MATH 214, MATH 215, MATH 224, MATH 225, MATH 227
- Discrete Math and Algebra: MATH 211, MATH 220, MATH 241, MATH 242, MATH 261
- Probability and Statistics: STAT 231, STAT 234 or higher

In addition, the student must take CMPS 201 or 203, which is a first course in programming. Moreover, 9 credits must be chosen in one applied discipline or track from the following list:

- Computer Science: CMPS 202, CMPS 214, CMPS 215, CMPS 220, CMPS 231, CMPS 261, CMPS 262
- Economics: ECON 212, ECON 214, ECON 215, ECON 217, ECON 218, ECON 227, ECON 228, ECON 239, ECON 243
- Natural Sciences: PHYS 210, PHYS 211, PHYS 212, PHYS 214, PHYS 217, PHYS 220, PHYS 235, PHYS 236, CHEM 201, CHEM 217, CHEM 218, CHEM 233
- Engineering: CIVE 210, CIVE 310, CIVE 311, CIVE 411, CIVE 610, EECE 210, EECE 290, EECE 330, EECE 340, EECE 442, EECE 490, EECE 491, EECE 641, EECE 693, INDE 301, INDE 302, MECH 201, MECH 230, MECH 310, MECH 314, MECH 320, MECH 332, MECH 412, MECH 414
- Statistics and Applications: STAT 231, STAT 234, STAT 235, STAT 236 or EPHD 213, STAT 237, STAT 238, STAT 239, EPHD 203, CMPS 262, EECE 490, EECE 693
- Actuarial Science: MATH 272, MATH 273, MATH 274

Some of the above Tracks can be further subdivided as listed below. Students can use the following classification as a guideline for choosing their 3 track courses.

- Econometrics: ECON 214, ECON 215, ECON 217
- Macroeconomics: ECON 212, ECON227, ECON 228
- Mathematical Economics: ECON 217, ECON 239, ECON 243
- Mechanics: CIVE 210, MECH 201, MECH 230, MECH 320, MECH 332
- Fluid Mechanics and Thermodynamics: MECH 310, MECH 314, MECH 412, MECH 414
- Signal Processing: EECE 210, EECE 290, EECE 340, EECE 442, EECE 491, EECE 641
- Operations Research: INDE 301, INDE 302, INDE 303 or STAT 238
- Structures: CIVE 210, CIVE 310, CIVE 311, CIVE 411, CIVE 610
- Machine Learning: STAT 239, EECE 490, EECE 693

- Statistical Techniques: STAT 231, STAT 234, STAT 235, STAT 236, STAT 237
- Statistics and Probability: STAT 231, STAT 234, STAT 238, STAT 23
- Statistics and Data Science: STAT 231, STAT 234, STAT 239, CMPS 262
- Statistics and Health Sciences: STAT 231, STAT 234, STAT 236, EPHD 203, EPHD 213

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Minor in Applied Mathematics

A minor in Applied Mathematics requires 18 credits which include MATH 201, MATH 210, either MATH 218 or MATH 219, and 9 more credits in mathematics courses numbered MATH 202, MATH 211 or above, or statistics courses numbered STAT 230 or above.

Note: A student can opt for a minor in mathematics or a minor in applied mathematics, but not both.

BA or BS in Statistics

The department requires 6 credits in courses numbered 200 or above in the natural sciences for the BS degree, and at least 9 credits in courses numbered 200 or above in the arts Cultures and Histories or Societies and Individuals for the BA degree. In both cases, it is recommended that at least 6 of these 9 credits be in disciplines that use quantitative methods and be chosen in conjunction with the student's faculty advisor. The Quantitative Thought requirements are the same for both degrees and consists of 45 credits as follows:

- In statistics: STAT 231, STAT 233, STAT 234, STAT 235, STAT 239, and at least one of STAT 237 or STAT 238
- In mathematics: MATH 201, MATH 210, MATH 218 or MATH 219, MATH 251
- In computer science: CMPS 201 or CMPS 203, CMPS 244
- 9 credits must be chosen from the following list of courses:
    - Statistics and Data Science: STAT 236, STAT 237 or STAT 238, STAT 333, STAT 338, STAT 348
    - Mathematics: MATH 211, MATH 281, MATH 351
    - Computer Science: CMPS 262

Moreover, an additional 9 credits must be chosen from the following list of technical elective courses from applied disciplines or mathematics:

- **Computer Science**: CMPS 202, CMPS 261, CMPS 364, CMPS 365
- **Engineering**: INDE 301, INDE 302, EECE 330, EECE 490, EECE 641, EECE 693
- **OSB**: BUSS 200, MNGT 222, DCSN 200, DCSN 216, DCSN 220
- **Mathematics**: MATH 211, MATH 220, MATH 223, MATH 224, MATH 225, MATH 227, MATH 241, MATH 261, MATH 272, MATH 273, MATH 274, MATH 281, MATH 306, MATH 351

Students planning to pursue higher education in statistics are advised to take their technical electives in advanced mathematics courses, such as MATH 223 and MATH 227.

Students interested in Actuarial Science are advised to take their technical electives as MATH 272, MATH 273, and MATH 274. Note that, students planning to pursue a career as an Actuary have to pass a sequence of professional exams and complete VEE credits (Validation for Educational Experience). Thus, they are also advised to take the following courses within their degree requirements: ECON 211, ECON 212; and the following additional courses above the required 90 credits: BUSS 211, ACTN 210, FINA 210, FINA 220.

Students interested in Data Science are advised to take their technical electives as EECE 490 and EECE 693 and at least one course from: CMPS 202 or EECE 330, CMPS 261, EECE 641, BUSS 200, MNGT 222, DCSN 200, DCSN 216. They are also advised to take STAT 236 and STAT 237 within their degree requirements.

It is to be noted that STAT 201, STAT 203, STAT 210, and STAT 230 are mainly service courses. STAT 201 is essentially equivalent to EDUC 227, and STAT 210 is essentially equivalent to ECON 213. Students can get credit for only one of the following: STAT 201, STAT 203, STAT 210, STAT 230, STAT 233, EDUC 227, ECON 213.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Minor in Statistics

A minor in statistics can be pursued via one of two options:

- Option 1: MATH 201, MATH 218 or MATH 219, STAT 231, STAT 233, STAT 234 and STAT 235.
- Option 2: MATH 201, MATH 218 or MATH 219, STAT 230, STAT 234, STAT 235 and one additional advanced course in statistical sciences to be selected with the approval of the department chair. A list of recommended courses includes: STAT 236 or above, EPHD 320, EPHD 321, EECE 603, EECE 641, EECE 644, EECE 667, EECE 693, INDE 303, and INDE 430.

Course Descriptions

MATH 100 College Algebra 3.0; 3 cr.
Mathematical notations and basic notions; properties of real numbers; solving linear, quadratic, and absolute equations and inequalities; solving system of linear equations; properties of functions and their graphs; straight lines and parabolas and their equations; polynomial operations. Not open to students with prior credit in MATH 101 (or its equivalent). MATH 101 may be taken for credit after a student has passed MATH 100. Every term.

MATH 101 Calculus and Analytic Geometry I 3.1; 3 cr.
Limits, continuity, differentiation with application to curve plotting; Rolle's theorem; integration with application to area, distance, volume, arc-length; fundamental theorem of calculus, transcendental functions. MATH 101 may be taken for credit after a student has passed MATH 203. MATH 203 may not be taken for credit after a student has passed MATH 101. Based on placement. Every term.

MATH 101 I MATH 101 Intensive 0.0; 0 cr.
Mathematical notation and basic notions; properties of real numbers; factoring polynomials; linear and quadratic equations; fractions; inequalities; absolute value equations; angles and trigonometric functions. Based on placement. Co-requisite: MATH 101. Every Term.

MATH 102 Calculus and Analytic Geometry II 3.1; 3 cr.
Techniques of integration, improper integrals, polar coordinates, conic sections, analytic geometry in space, parametric equations, and vector functions and their derivatives. Prerequisite: MATH 101. Every term.

MATH 201 Calculus and Analytic Geometry III 3.1; 3 cr.
Sequences and series, Taylor approximation, Multivariable functions, partial derivatives, multiple integrals, cylindrical and spherical coordinates, and integration along curves. Prerequisite: MATH 102. Every term.

MATH 202 Differential Equations 3.1; 3 cr.
Integration of vector fields along curves and on surfaces, Green's theorem, Stokes's theorem, divergence theorem; first-order differential equations, linear differential equations, series solutions, Bessel's and Legendre's functions, the Laplace transform, and systems of differential equations. Prerequisite: MATH 201. Every term.

MATH 203 Mathematics for Social Sciences I 3.0; 3 cr.
Mathematical notations and basic notions; properties of real numbers; factoring polynomials; functions and their graphs; straight lines and parabolas and their equations; Gaussian elimination; exponential and logarithmic functions; limits and continuity; basic differential calculus. Not open to students with prior credit in MATH 101 (or its equivalent) or MATH 201. MATH 101 may be taken for credit after a student has passed MATH 203. MATH 203 may not be taken for credit after a student has passed MATH 101. Every term.

MATH 204 Mathematics for Social Sciences II 3.0; 3 cr.
Matrix operations, inverses and determinants; elementary combinatorics; introduction to probability; random variables; binomial, normal and Poisson distributions; basic integral calculus; introduction to differential equations; partial derivatives and extremal points of multivariable functions. Prerequisite: MATH 101 or MATH 203. Not open to students majoring in economics. Every term.

MATH 210 Introduction to Analysis 3.0; 3 cr.
The real numbers, completeness, sequences, some basic topology of the real line, compact sets, Heine-Borel theorem, continuous functions, intermediate value theorem, uniform continuity, extreme values, differentiation, mean-value theorem, Taylor's theorem, Riemann integration, sequences and series of functions. Prerequisite: MATH 201. Every term.

MATH 211 Discrete Mathematics 3.1; 3 cr.
Logical reasoning, sets, relations and functions; mathematical induction, counting, and simple finite probability theory; analysis of algorithms, complexity; recurrence relations and difference equations; truth tables and switching circuits; graphs and trees; strings and languages. MATH 211 does not count towards the major course requirements in pure mathematics. Pure mathematics majors may take MATH 211 as a general elective. This course is equivalent to CMPS 211. Every term.

MATH 212 Introductory Partial Differential Equations 3.0; 3 cr.
Partial differential equations as mathematical models in science. Method of characteristics and first-order quasilinear PDEs. Transport and wave equations, D'Alembert formula. Linear evolution equation and their eigensolutions eigensolutions. Fourier series: pointwise convergence, Gibbs phenomena, uniform convergence of sequences and series of functions and of Fourier series, Parseval formula. Application of Fourier series in solving second and higher-order linear PDEs on bounded domains (Heat systems, Laplace and wave equations). Method of separation of variables and Sturm-Liouville systems. Energy methods to study uniqueness, and equilibrium solutions. Fourier transform, inversion formula, and application to solving partial differential equations. MATH 212 does not count towards the major course requirements in pure mathematics. Pure mathematics majors may take MATH 212 as a general elective. Prerequisite: MATH 202. Every term.

MATH 213 Higher Geometry 3.0; 3 cr.
Topics chosen from isometries of Euclidean space, inversion, elements of differential geometry, the Frenet frame, curvature, torsion, the pseudo-sphere, hyperbolic geometry, and affine and projective geometry. Biennially.

MATH 214 Topology I 3.0; 3 cr.
Topological spaces, continuous functions, separation axioms, compactness, connectedness, metrizable spaces, product spaces, quotient topology. Prerequisite: MATH 210. Annually.

MATH 215 Introduction to Differential Geometry 3.0; 3 cr.
Parameterized curves and the Frenet-Serret frame, fundamental theorem for curves, isoperimetric inequality, regular surfaces, Gauss map and the fundamental forms, curvature, geodesics and parallel transport, Gauss-Bonnet theorem. Prerequisites: MATH 201 and MATH 218/219, or consent of instructor. Biennially.

MATH 216 Topology II 3.0; 3 cr.
A senior level course covering more advanced topics in topology. Prerequisite: Consent of instructor. Occasionally.

MATH 218 Elementary Linear Algebra with Applications 3.0; 3 cr.
An introduction to linear algebra at a less theoretical level than MATH 219. Systems of linear equations and Gaussian elimination, vectors in Rn, matrices, determinants, vector spaces, subspaces and dimension, orthogonal projection and least-squares approximation, eigenvalues, eigenvectors, and selected applications. Students cannot receive credit for both MATH 219 and MATH 218. Every term.

MATH 219 Linear Algebra I 3.0; 3 cr.
A rigorous introduction to linear algebra, with emphasis on proof and conceptual reasoning. Vector spaces, linear transformations and their matrix representation, linear independence, bases and dimension, rank-nullity, systems of linear equations, brief discussion of inner products, projections, orthonormal bases, change of basis, determinants, eigenvalues, eigenvectors, and spectral theorem. Students cannot receive credit for both MATH 219 and MATH 218. Every term.

MATH 220 Linear Algebra II 3.0; 3 cr.
A deeper study of determinants, inner product spaces, and eigenvalue theory. Adjoints and the spectral theorem, primary decomposition, quotient spaces, diagonalization, triangularization, rational and Jordan forms, connection with modules over a PID, dual spaces, bilinear forms, and tensors. Prerequisite: MATH 241 or consent of instructor. Biennially.

MATH 223 Advanced Calculus 3.0; 3 cr.
Metric spaces, normed vector spaces, the derivative as a linear transformation, chain rule, vector versions of mean-value theorem, Taylor's formula, inverse and implicit function theorems, Riemann integration in Rn, differential forms, the general Stokes's theorem, and notions of differential geometry. Prerequisites: MATH 210, and MATH 218 or MATH 219. Annually.

MATH 224 Fourier Analysis and Applications 3.0; 3 cr.
Fourier series, applications of Fourier series to the heat and wave equations, the Fourier transform on Rn, applications of the Fourier transform to the wave and heat equations on Rn, Shannon's sampling formula, the Radon transform, applications of the Radon transform to medical imaging, and the discrete (or fast) Fourier transform. Prerequisites: MATH 210, and MATH 218 or MATH 219. Annually.

MATH 225 Wavelets and Applications 3.0; 3 cr.
Discrete Fourier transform, fast Fourier transform, wavelets on the integers, applications to signal and image processing. Prerequisite: MATH 224. Occasionally.

MATH 227 Introduction to Complex Analysis 3.0; 3 cr.
Complex numbers, analytic functions, integration in the complex plane, Cauchy's integral theorem, Taylor series, Laurent series, singularities, residues, and contour integration. Prerequisites: MATH 210 or (MATH 201 and consent of instructor). Annually.

MATH 233 Advanced Probability and Random Variables 3.0; 3 cr.
Same description as STAT 233. Annually.

MATH 234 Introduction to Statistical Inference 3.0; 3 cr.
Same description as STAT 234. Annually.

MATH 238 Applied Probability Models 3.0; 3 cr.
Same description as STAT 238. Annually.

MATH 241 Introduction to Abstract Algebra 3.0; 3 cr.
Groups, subgroups, homomorphisms, normal subgroups and quotient groups, permutation groups, orbits and stabilizers, statement of Sylow theorems, rings, ideals, homomorphisms and quotient rings, and Euclidean and principal ideal domains. Prerequisite: MATH 219 or MATH 218 with a good understanding of proof, or consent of instructor. Annually.

MATH 242 Topics in Algebra 3.0; 3 cr.
Topics chosen from fields and Galois theory, advanced group theory, ring theory, modules over a PID, and other topics as determined by the instructor. Prerequisite: MATH 241. Biennially.

MATH 251 Numerical Computing 3.1; 3 cr.
Computer number representations and round-off errors; Basic techniques in numerical analysis: root finding; Gauss elimination and PLU decomposition; polynomial and spline interpolation; differentiation and integration, Richardson extrapolation; solving initial value problems for ordinary differential equations and systems of differential equations. Implementations and analysis of algorithms are stressed. Projects using MATLAB or similar tools are assigned. Prerequisites: CMPS 201 or 203 or EECE 230 or EECE 231, and MATH 201. Prerequisite or Co-requisite: MATH 218 or MATH 219. This course is equivalent to CMPS 251. Every term.

MATH 261 Number Theory 3.0; 3 cr.
Prime factorization, the Euclidean algorithm, congruences, quadratic reciprocity, some Diophantine equations, binary quadratic forms, and continued fractions. Prerequisite: MATH 219 or consent of instructor. Annually.

MATH 271 Set Theory 3.0; 3 cr.
Operations on sets and families of sets, ordered sets, transfinite induction, axiom of choice and equivalent forms, and ordinal and cardinal numbers. Occasionally

MATH 272 Mathematical Interest Theory 3.0; 3 cr.
This course develops a fundamental understanding of the concepts of financial mathematics and how those concepts are applied in calculating present and accumulated values for various streams of cash flows. Specific topics to be covered include: measurement of simple and compound interest, accumulated and present value, annuities, yield rates, amortization schedules, sinking funds, bonds, securities and related funds. It also includes material on financial derivatives. This course covers most of the syllabus of the SOA/CAS exam FM/2. Prerequisite: MATH 201. Annually.

MATH 273 Actuarial Mathematics I 3.0; 3 cr.
Same description as STAT 273. Annually.

MATH 274 Actuarial Mathematics II 3.0; 3 cr.
Same description as STAT 274. Annually.

MATH 281 Numerical Linear Algebra 3.0; 3 cr.
Basic Linear Algebra Subprograms (BLAS Operations of order 1, 2 and 3). Norms of vectors and matrices. Gram-Schmidt orthogonalization. Eigenvalues and Schur's decompositions. Singular value decomposition and pseudo-inverse of a rectangular matrix. Gauss transforms and PLU decomposition. Cholesky decomposition for symmetric positive definite matrices. Householder transforms and QR decomposition. Application to finding solutions to least square and linear regression problems. Iterative (indirect) methods to solve linear systems of equations: Jacobi, Gauss-Seidel, successive over-relaxation, gradient methods. Basic algorithms for computing eigenvalues of square matrices. This course is equivalent to CMPS 254. Prerequisites: MATH 218 or MATH 219. Prerequisite or Co-requisite: Math 251. Annually.

MATH 293 Senior Tutorial Courses 3.0; 3 cr.
Prerequisite: Senior standing.

BA in Mathematics: 39 Credits in Mathematics

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Understanding the World (6)**	**Major requirements + Quantitative Reasoning (42)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+6 +42+6+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required courses (6)	Required mathematics courses (27): MATH 201, 210, 214, 219, 223, 227, 233, 241, and at least one of 220 or 242. Required mathematics electives (12): MATH 202, and/or mathematics courses numbered 213 and above. Required programming course (3): CMPS 201 or 203	Required Community-engaged learning course (3) Required Societies and Individuals courses (6)

BS in Mathematics: 39 Credits in Mathematics

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Understanding the World (6)**	**Major requirements + Quantitative Reasoning (42)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+9 +42+6+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required courses (9)	Required mathematics courses (27): MATH 201, 210, 214, 219, 223, 227, 233, 241, and at least one of 220 or 242 Required mathematics electives (12): MATH 202, and/or mathematics courses numbered 213 and above. Required programming course (3): CMPS 201 or 203	Required Community-engaged learning course (3) Required Societies and Individuals courses (6)

BA in Applied Mathematics: 39 Credits in Mathematics

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Understanding the World (3)**	**Major requirements + Quantitative Reasoning (42)**	**Applied Tracks (9)**	**Community-Engaged Learning (3), Societies and Individuals (6)**
Lecture Courses (9+12+3 +42+9 +3+6)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required courses (3)	Required Applied Mathematics courses (30): MATH 201, 202, 210, 212, 218 or 219, 223, 233, 251, 281, and at least one of 224 or 227. Required Mathematics electives (9): MATH courses numbered 211 and above. These credits must include at least two of the following three areas: >>Analysis and Geometry >>Discrete Math and Algebra >>Probability and Statistics Required Computer Science course (3): CMPS 201 or 203	9 credits chosen in one of the following applied disciplines or tracks: Computer Science Economics Natural Sciences Engineering Actuarial Sciences Statistics and Applications	Required Community-engaged learning course (3) 6 credits in Societies and Individuals. Must include one Economics course (3): ECON 211

BS in Applied Mathematics: 39 Credits in Mathematics

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Understanding the World (6)**	**Major requirements + Quantitative Reasoning (42)**	**Applied Tracks (9)**	**Community-Engaged Learning (3), Societies and Individuals (6)**
Lecture Courses (9+12+6 +42+9 +3+6)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required courses (6)	Required Applied Mathe-matics courses (30): MATH 201, 202, 210, 212, 218 or 219, 223, 233, 251, 281, and at least one of 224/227. Required Mathematics electives (9): MATH courses numbered 211 and above. These credits must include at least two of the following three are-as: >>Analysis and Geometry >>Discrete Math and Al-gebra >>Probability and Statis-tics Required Computer Sci-ence course (3): CMPS 201 or 203	9 credits chosen in one of the following applied disciplines or tracks: Computer Science Economics Natural Sciences Engineering Actuarial Sciences Statistics and Applications	Required Commu-nity-enga- ged learn-ing course (3) 6 credits in Societies and Individ-uals. Must include one Economics course (3): ECON 211

Course Descriptions

STAT 201 Elementary Statistics for the Social Sciences 3.0; 3 cr.
Data organization and frequency distributions; measures of central tendency and dispersion; probability and random variables; binomial and normal distributions; estimation, and hypothesis testing. Open only to arts students whose mathematical preparation does not allow them to take STAT 210. Students who take STAT 201 will not receive credit for STAT 203, STAT 210, STAT 230, STAT 233, or ECON 213. Every term.

STAT 203 Statistics for Gender Studies 3.0; 3 cr.
This course is tailored for students interested in gender studies. The course will primarily use gender data for examples and case studies. Topics include: Populations, samples, and sampling error; types of data, frequency distributions, and graphical displays of data; empirical definition of probability and probability distributions; conditional probability, independence, random variables, binomial, normal, and t distributions; hypothesis testing; linear regression and correlation; chi squared test; and analysis of variance. This course can also serve as a course in general research methods. Students who take STAT 203 will not receive credit for STAT 201, STAT 210, STAT 230, STAT 233, or ECON 213. Every term.

STAT 210 Elementary Statistics for the Sciences 3.0; 3 cr.
Populations, samples, and sampling error; types of data, frequency distributions, and graphical displays of data; measures of central tendency and dispersion; probability and probability distributions; conditional probability, independence, Bayes' rule, and counting rules; discrete and continuous distributions, random variables, binomial, Poisson, normal, and t distributions; point and interval estimation and hypothesis testing; chi squared tests and One way Analysis of variance, linear regression and correlation. Computer packages may be used to illustrate methods. Students who successfully finish STAT 210 will not receive credit for STAT 201, STAT 203, STAT 230, STAT 233, or ECON 213. Every term.

STAT 230 Introduction to Probability and Statistics 3.1; 3 cr.
Display of data; probability models; independence and conditioning; methods of counting; discrete and continuous random variables and their individual and joint distributions; mixture of distributions; expectation of random variables; variance, covariance and correlation; Chebyshev's inequality; law of large numbers; central limit theorem; point and interval estimation; hypothesis testing. Prerequisite: MATH 201. Students who successfully finish STAT 230 will not receive credit for STAT 201, STAT 203, STAT 210, STAT 233, or ECON 213. Every term.

STAT 231 Introductory Statistical Computing 3.0; 3 cr.
This course introduces the principles of statistical thinking as well as the main problems of statistics with a computational emphasis and perspective. The course begins with a primer on the R statistical environment, and the problems of pseudorandom number generation of both uniform and non-uniform random variates. It then proceeds to develop the main statistical ideas of sampling, inference (point and interval estimation, hypothesis testing) and concludes with simple linear regression as a first example of modeling. Methods are illustrated with R. Annually.

STAT 233 Advanced Probability and Random Variables 3.0; 3 cr.
Axiomatic definition of probability, random variables, univariate and multivariate probability density functions and cumulative distribution functions; expectation; moment generating function; conditional distribution; families of discrete and continuous random variables; distribution of functions of random variables; stochastic convergence and convergence of distribution functions; the law of large numbers and the central limit theorem. Prerequisite: MATH 201. Students who successfully finish STAT 233 will not receive credit for STAT 201, STAT 203, STAT 210, STAT 230, or ECON 213. Annually.

STAT 234 Statistical Inference I - Parametric Methods 3.0; 3 cr.

Convergence in probability, in distribution, in mean. Review of the central limit theorem and the weak law of large numbers. Point estimation. Method of moments. Maximum likelihood. Fisher information. Information bound. Properties of maximum likelihood estimation. Newton-Raphson and EM algorithms. Sufficiency. Exponential families. Blackwell Rao Theorem. The bootstrap method. Confidence intervals. Hypothesis Testing. Errors. Optimality for tests. Neyman–Pearson tests and optimal tests for one-sided hypotheses. Generalized likelihood ratio tests. Elements of Bayesian estimation and decision theory. Prerequisites: STAT 233, or STAT 230 with consent of instructor. Annually.

STAT 235 Applied Regression Analysis 3.0; 3 cr.

Simple Linear Regression. Multiple Regression. Main Effects and Their Interpretation. Complex Regressors. Testing and Analysis of Variance. Weighted Least Squares. Variance Stabilizing Transformations. The Delta Method. Bootstrap. Cross Validation. Regression Diagnostics. Variable Selection. Penalized Regression. Logistic Regression, Poisson Regression. Prerequisites: MATH 218 or MATH 219; STAT 234, or STAT 230 with the consent of the instructor. Annually.

STAT 236 Sampling Techniques 3.0; 3 cr.

This course teaches various methods and analyses for sampling from finite populations, which are essential for conducting statistical surveys in social, government and health statistics. It covers various schemes of sampling including simple random sampling, systematic and cluster sampling, stratified sampling, multi-stage sampling, ratio and regression sampling, double sampling and the problem of non-response. Estimation of parameters and properties of estimates are discussed. In particular, the Horwitz-Thompson estimator and the generalized Horwitz-Thompson estimator and probability-proportional-to-size (PPS) sampling are studied under each sampling scheme. Prerequisite: STAT 234. Biennially.

STAT 237 Statistical Inference II – Nonparametric Methods 3.0; 3 cr.

Methods of analyzing data when a parametric assumption is adopted. The course begins with classical methods of estimation and testing based on order statistics (such as quantile estimation). The course continues with testing based on ranks (including the sign test, Wilcoxon signed-rank test, Mann-Whitney two sample test, Kruskall-Wallis test) and testing based on the empirical distribution function (including the Kolmogorov-Smirnov test of goodness of fit). The notion of asymptotic relative efficiency is carefully studied and applied to some of the tests. The course also covers the modern concepts of density estimation in one and higher dimensions (histogram and kernel estimation), selection of optimal kernel and optimal bandwidth. Prerequisite: STAT 234 or consent of instructor. Biennially.

STAT 238 Applied Probability Models 3.0; 3 cr.

Conditional probability and expectation; discrete and continuous time Markov chains; Chapman-Kolmogorov difference and differential equations; limiting probabilities; branching, Poisson, and birth and death processes; distribution of arrival times; queuing theory. Prerequisites: MATH 218 or MATH 219; and STAT 233, or STAT 230 with consent of instructor. Annually.

STAT 239 Statistical Learning 3.0; 3 cr.

Introduction to supervised learning. Loss functions and population risk. Estimates of risk. Resampling methods (cross-validation and the bootstrap). k-nearest neighbors. Linear and polynomial regression, logistic regression and linear discriminant analysis. Model selection and regularization methods (ridge regression and lasso). Non-linear models and generalized additive models. Tree-based methods, random forests and boosting. Support-vector machines. Feedforward and convolutional neural networks. Prerequisites: MATH 218 or MATH 219; STAT 234 or STAT 230 with consent of the instructor. Annually.

STAT 273 Actuarial Mathematics I 3.0, 3 cr.

This course covers models for single life contingencies, present-value random variables. It provides an introduction to survival models, force of mortality, mortality tables, life annuities, calculation of premium, policy values for various cash flows. This course covers portions of the SOA Exam FAM. Prerequisites: MATH 202, STAT 233 or STAT 230 with consent of instructor, and MATH 272 or consent of the instructor. Annually.

STAT 274 Actuarial Mathematics II 3.0, 3 cr.

Multiple life contingencies and multiple state models with the underlying theory of Markov chains, multiple decrement models and construction of multiple decrement tables, introduction to the mathematics of pension, valuation of benefits and reserves (with and without expenses). This course covers portions of the SOA Exam FAM. Prerequisite: MATH 202, STAT 233 or STAT 230 with consent of instructor, and MATH 272 or consent of the instructor. Annually.

BA in Statistics: 39 Credits in Statistics/Mathematics

Modes of Analysis	**Understanding Communication - English and Arabic(9)**	**Cultures and Histories (9), Human Values (3)**	**Understanding the World (3)**	**Major requirements + Quantitative Reasoning (45)**	**Technical Electives (9)**	**Community-Engaged Learning (3), Societies and Individuals (6)**
Lecture Courses (9+12 +3+45+ 9+3+6)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required course (3)	Required mathematics courses (12): MATH 201, 210, 218 or 219, 251 Required statistics courses and data science (18): STAT 231, 233, 234, 235, 239 and at least one of 237 or 238 Required computer science courses (6): CMPS 201 or 203, CMPS 244 Electives MATH/ STAT/ CMPS (9): STAT 236, 237 or 238, 333, 338, 348, MATH 211, 281, 351, CMPS 262	9 credits from the following list: Computer Science: CMPS 202, 261, 391, 392 Engineering: INDE 301, 302, EECE 330, 490, 641, 693 OSB: BUSS 200, MNGT 222, DCSN 200, 216, 220 Mathematics: MATH 211, 220, 223, 224, 225, 227, 241, 261, 272, 273, 274, 281, 306, 351	Required Community-engaged learning course (3) Required Societies and Individuals courses (6)

BS in Statistics: 39 Credits in Statistics/Mathematics

Modes of Analysis	**Understanding Communication - English and Arabic(9)**	**Cultures and Histories (9), Human Values (3)**	**Understanding the World (3)**	**Major requirements + Quantitative Reasoning (45)**	**Technical Electives (9)**	**Community-Engaged Learning (3), Societies and Individuals (6)**
Lecture Courses (9+12 +6+45+ 9+3+6)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required course (3)	Required mathematics courses (12): MATH 201, 210, 218 or 219, 251 Required statistics and data science courses (18): STAT 231, 233, 234, 235, 239 and at least one of 237 or 238 Required computer sciences courses (6): CMPS 201 or 203, CMPS 244 Electives MATH/ STAT/ CMPS (9): STAT 236, 237 or 238, 333, 338, 348, MATH 211, 281, 351, CMPS 262	9 credits from the following list: Computer Science: CMPS 202, 261, 391, 392 Engineering: INDE 301, 302, EECE 330, 490, 641, 693 OSB: BUSS 200, MNGT 222, DCSN 200, 216, 220 Mathematics: MATH 211, 220, 223, 224, 225, 227, 241, 261, 272, 273, 274, 281, 306, 351	Required Community-engaged learning course (3) Required Societies and Individuals courses (6)

Department of Philosophy

Chairperson:	Gannagé, Emma
Professors:	Brassier, Ray; Haydar, Bashshar H.
Associate Professors:	Bashour, Bana M.; Gannagé, Emma; Johns, Christopher; Muller, Hans D.
Assistant Professors:	Mohammadian, Mousa; Turan, Caner
Lecturers:	Agha, Saleh J.; Amm, Charbel; Baasiri, Mahmoud; Barakat, Karim; Chehayeb, Fidaa; Hasan, Hani; Talhouk, Omar
Instructors:	Hariri, Muhannad; Kasab, Jana; Nisr, Farah Sandra; Sabra, Zeinab; Samaha, Raid; Wahab, Karam

The Department of Philosophy offers programs leading to the degrees of Bachelor of Arts and Master of Arts in Philosophy. Requirements for transfer to the department include approval by the department and a grade of C+ or more in any two Cultures and Histories courses (excluding the communication skills requirements in Arabic and English).

Mission Statement

The undergraduate program in Philosophy provides students with a knowledge of key historical and contemporary philosophers and philosophical problems, together with a range of responses to those problems. They promote respect for clarity, truth, critical reflection and rational argument. They promote independence of thought rooted in a fair-minded understanding of opposing views. They strive to equip students with the knowledge and skills needed to navigate relevant portions of the contemporary philosophical terrain; competence at critical analysis; and the ability to write about abstract issues in a clear, nuanced and compelling manner. Both programs also seek to impart an awareness of the application of philosophical thought to other academic disciplines or to matters of public interest, encouraging students to apply their philosophical skills more widely.

BA in Philosophy

Students majoring in philosophy are required to take a total of at least 36 credits of philosophy courses, which must include PHIL 211, PHIL 218, one of PHIL 205, 206, 209 or 210, two of PHIL 213, PHIL 214, and PHIL 225, and at least two of the seminar courses, which are numbered PHIL 250-262. One of those courses must be a Writing in the Disciplines course. Selected courses between PHIL 250 and PHIL 262 will be offered as Writing in the Disciplines courses. Students should also choose, under the supervision of the department, a balanced program of systematic and historical courses. In fulfillment of university requirements, majors must also take the following:

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities.

Students choosing a minor in philosophy are required to take a total of 15 credits in philosophy, including at least two of PHIL 211, 213, 214, 225.

Course Descriptions

PHIL 101 Applied Philosophy 3.0; 3 cr.
A course that deals with philosophical questions which have practical import; it aims to introduce students to the philosophical mode of analysis. Every term.

PHIL 102 Philosophical Classics 3.0; 3 cr.
An introduction to the thought of some major figures in the history of philosophy. Every term.

PHIL 201 Introduction to Philosophy 3.0; 3 cr.
An introduction to philosophy and its methods through an analysis of traditional issues in ethics, epistemology, metaphysics, and the philosophy of religion. Every term.

PHIL 205 Bio-Medical Ethics 3.0; 3 cr.
A philosophical examination of a number of ethical topics in the field of biology and medicine, such as abortion, physician-assisted suicide, eugenics, genetic engineering, allocation of medical resources, experimentation on animals and humans, and so on. Annually.

PHIL 206 Business Ethics 3.0; 3 cr.
A philosophical examination of a number of ethical topics arising in the areas of business and management, such as fraud and corruption, product safety, insider trading, honesty in advertising, discriminatory hiring practices, and so on. Occasionally.

PHIL 208 Topics in Applied Ethics (A, B, C, D, E...) 3.0; 3 cr.
A philosophical examination of the ethics of a particular field of ethical application, such as technology, food, war, engineering, psychology, etc. The course will focus on one such area, varied according to instructor and section. Annually.

PHIL 209 Environmental Ethics 3.0; 3 cr.
An attempt to identify and discuss the major ethical and philosophical aspects of issues related to the environment and to determine the environment-related responsibilities and obligations incurred by people at the individual and collective levels. Annually.

PHIL 210 Ethics 3.0; 3 cr.
An introduction to some of the major normative ethical theories based on the study of the original writings of selected philosophers, including a section on applied ethics. Every term.

PHIL 211 Introduction to Logic 3.0; 3 cr.
A first introduction to formal and informal logic, including argument analysis, informal fallacies, natural deduction methods in propositional and first-order predicate logic. Every term.

PHIL 212 Philosophical Logic 3.0; 3 cr.
An introduction to basic concepts and tools which, in addition to being of interest by themselves, also inform various philosophical discussions and are taken for granted in different areas of contemporary philosophy. Occasionally.

PHIL 213 History of Ancient and Medieval Philosophy 3.0; 3 cr.
A survey of ancient and medieval philosophy from the pre-Socratics to Aquinas. Annually.

PHIL 214 History of Modern Philosophy 3.0; 3 cr.
A survey of early modern philosophy, from Descartes to Kant. Annually.

PHIL 215 Nineteenth Century Philosophy 3.0; 3 cr.
An introductory survey of post-Kantian philosophy, with emphasis on Fichte, Schelling, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Alternate years.

PHIL 216 Political Philosophy 3.0; 3 cr.
An examination of the main issues of political philosophy, such as political obligation, justice, political rights, and other issues. Annually.

PHIL 217 Aesthetics 3.0; 3 cr.
An examination of the central problems and issues that arise in the interpretation, analysis, and evaluation of works of art. Alternate years.

PHIL 218 Metaphysics and Epistemology 3.0; 3 cr.
An investigation of the most fundamental concepts involved in our thoughts about the world, including the nature of truth, knowledge, causality, substance, space, and time. Annually.

PHIL 219 Existentialism 3.0; 3 cr.
An introduction to existentialist philosophy within the context of nineteenth-century and twentieth-century philosophy. Alternate years.

PHIL 220 Symbolic Logic 3.0; 3 cr.
A study of the axiomatization and the meta-theory of classical propositional and predicate logic, first-order theories, as well as related philosophical issues. Prerequisite: PHIL 211. Occasionally.

PHIL 221 Philosophy of Mind 3.0; 3 cr.
An introductory examination of contemporary accounts of the nature of the mental and of psychological explanation. Annually.

PHIL 222 Philosophy of Science 3.0; 3 cr.
An introduction to the philosophical problems and issues that arise in the attempt to understand the nature of science. Alternate years.

PHIL 223 Philosophy of Language 3.0; 3 cr.
An introductory examination of various contemporary accounts of the nature of language and meaning. Alternate years.

PHIL 224 Philosophy of Religion 3.0; 3 cr.
An in-depth survey of the main philosophical questions connected to religion, including questions about religion as a feature of human experience, as well as questions connected to the nature of God, evil, free will, and so on. Alternate years.

PHIL 225 History of Moral Philosophy 3.0; 3 cr.
A survey of some major historical traditions in moral philosophy, including at least one figure from ancient or medieval philosophy, and at least one figure from modern philosophy. Alternate years.

PHIL 226 Ethical Theory 3.0; 3 cr.
An examination of some theories about the moral status of actions or character, or about the overall nature of morality itself. Alternate years.

PHIL 227 Marx and Philosophy 3.0; 3 cr.
This course examines the philosophical foundations of Marx's critique of capitalism. It focuses on the fundamental concepts of Marx's critical theory: alienation, practice, labor, value, production, commodity, class and contradiction. Alternate years.

PHIL 230 Philosophy of Plato 3.0; 3 cr.
An introduction to some of Plato's major dialogues. Alternate years.

PHIL 231 Philosophy of Aristotle 3.0; 3 cr.
An introductory examination of the physics, metaphysics, logic, ethics, and politics of Aristotle. Alternate years.

PHIL 232 Islamic Philosophy 3.0; 3 cr.
An examination of the philosophical and religious thought of the major philosophers of Islam. Offered either in Arabic or in English. Alternate years.

PHIL 249 Philosophy of Feminism 3.0; 3 cr.
An examination of philosophical issues relating to gender relations and the foundations of feminist theory; issues addressed primarily involve the ethical or epistemological content of feminist theory. Alternate years.

PHIL 250 Special Topics in Logic 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 251 Special Topics in Ethics 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 252 Special Topics in Political Philosophy 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 253 Special Topics in Aesthetics 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 254 Special Topics in Metaphysics 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 255 Special Topics in Epistemology 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 256 Special Topics in the Philosophy of Science 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 257 Special Topics in the Philosophy of Language 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 258 Special Topics in the Philosophy of Mind 3.0; 3 cr.
May be repeated for credit. Occasionally.

PHIL 260/261 Special Topics in the History of Philosophy 3.0; 3 cr.
Occasionally.

PHIL 262/263 Special Topics in Contemporary Philosophy 3.0; 3 cr.
Occasionally.

PHIL 271/272 Directed Courses in Philosophy 3-6 cr.
Prerequisite: Consent of instructor. Offered on demand.

24 + 12 Credits in Philosophy

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (Min. 6)	Sciences, Math, and Technology (Unspecified), Understanding the World, Quantitative Reasoning (9:3/6+3/6)	Community-Engaged Learning (3)
Lecture Courses (9+12+36 +6+9+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values philosophy courses (15): PHIL 211(3), 218(3) one course from the following: 205(3), 206(3), 209(3), 210(3) two courses from the following: 213(3), 214(3) 225(3) 8 elective courses from the following lecture and/or seminar courses (24): the following lecture 201(3), 205(3) 206(3), 208(3), 209(3), 210(3), 213(3), 214(3), 215(3), 216(3), 217(3), 218(3), 219(3), 220(3), 221(3), 222(3), 223(3), 224(3), 225(3), 226(3), 227(3), 230(3), 231(3), 232(3), 249(3) Elective philosophy courses: PHIL 250(3), 251(3), 252(3), 253(3), 254(3), 255(3), 256(3), 257(3), 258(3), 259(3), 260(3), 261(3), 262(3), 263(3)	Electives (6)	Electives (9): a course in computer literacy is recommended Philosophy majors can satisfy this requirement with any Quantitative Reasoning course (including PHIL 220) except for PHIL 211	Requirement course (3)

Seminar (33)					
Labor-atory (0)				Computer Lab (3)	
Research Project (93)		PHIL 210, 213–224, 230–232, 249–263			

Department of Physics

Chairperson:	Kazan, Michel J.
Professor Emeritus:	Mavromatis, Harry A.
Professors:	Antar, Ghassan Y.; Chamseddine, Ali H.; Isber, Samih T.; Kazan, Michel J.; Klushin, Leonid I.; Sabra, Wafic A.; Tabbal, Malek D.; Touma, Jihad R.
Assistant Professors:	Haidar, Mohamad J.; Najem, Sara A.
Lecturers:	Al-Sayegh, Amara A.; Harajli, Zainab; Malaeb, Ola; Rahbany, Nancy; Saad, Cynthia R.

BS in Physics

Mission Statement

The program leading to the Bachelor of Science emphasizes the fundamental concepts and principles of physics and their roles in a variety of disciplines with a liberal arts setting. The educational focus of the Physics Department is to provide the students with high-quality instruction in theoretical and experimental physics. Consequently, theoretical courses, together with computer modeling experience and a comprehensive set of laboratory experiments, introduce the students to various methods of inquiry and research in physics. The emphasis is not only on subject instruction, but also on the development of communication and teamwork skills, as well as critical and analytical thinking. The program is designed to graduate well-rounded, free-thinking individuals with inquisitive minds who are well prepared for further study in basic and applied research and are capable of pursuing professional careers in a variety of fields.

The Department of Physics offers courses at the undergraduate level leading to a bachelor's degree in physics.

The requirements for a BS in Physics are 90 credits for students entering at the sophomore level.

Degree Requirements

The degree requirements are divided into the General Education requirements, set by the university in accordance with its mission statement as a Liberal Art institution, and the Physics requirements set by the Physics Department.

The General Education requirements include:

- 9 credits in Understanding Communication divided into 3 credits in Arabic and 6 credits in English
- 9 credits in Cultures and Histories
- 3 credits in Human Values. At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA.
- 3 credits in Community Engaged Learning
- 6 credits in Societies and Individuals
- 3 credits in one Understanding the World course must be from outside the major and approved as a General Education course.
- At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

The Physics requirements include:

- 39 credits in Physics divided into 27 credits of required Physics courses, 6 credits elective Physics courses, and 6 credits of required Physics Lab courses (the total number is 40 credits if PHYS 228/228L are chosen as an elective)
- 9 credits in Quantitative Reasoning including 6 credits in Math (MATH 201 and 202) and 3 credits in CMPS 201 or EECE 230
- 9 credits of free electives

The program for the Physics major includes the following required courses: PHYS 212, PHYS 214, PHYS 216, PHYS 217, PHYS 221L, PHYS 220, PHYS 222, PHYS 235, PHYS 236, PHYS 257L, PHYS 299A, and PHYS 299B. Moreover, two elective courses must be selected from PHYS 218, PHYS 223, PHYS 225, 226, PHYS 228/228L, PHYS 231, PHYS 232, PHYS 249, or any other elective offered in PHYS. Also required are the following courses in mathematics: MATH 201, MATH 202, and CMPS 201 or EECE 230.

Freshman students who intend to major in Physics are required to complete PHYS 101 and PHYS 101L with a minimum cumulative average of 2.3 and to complete MATH 101 and MATH 102 (or their equivalent) with a minimum cumulative average of 2.3. More details can be found under the Freshman Courses section of this catalogue.

Students who wish to transfer to physics must obtain a cumulative average of at least 2.3 in the physics courses normally taken in the sophomore year and a cumulative average of at least 2.3 in MATH 201 and 202 before they are allowed to proceed to junior level courses.

Physics majors whose physics average falls below 2.3 or whose cumulative average in MATH 201 and 202 is below 2.3 after three terms in the major will be dropped from the Department.

The minor in physics requires 18 credits including PHYS 212, 221L and one of the following three courses (PHYS 210, PHYS 211 or PHYS 214), plus 9 credits selected from PHYS 217, PHYS 220, PHYS 226, PHYS 235, PHYS 236 or a special topic course.

PHYS 101, PHYS 101L, PHYS 210, PHYS 210L, PHYS 211, PHYS 211L, and PHYS 212 are introductory courses for students of chemistry or engineering.

PHYS 103, PHYS 103L, PHYS 204, PHYS 204L, PHYS 205 and PHYS 205L are introductory courses for students in nursing, public health, biology, petroleum geosciences, and for stu-

dents wishing to enter the medical school but are not physics or chemistry majors.

PHYS 204, PHYS 204L, PHYS 205 and PHYS 205L are not equivalent totally or in part to the following: PHYS 210, PHYS 210L, PHYS 211, PHYS 211L or PHYS 212. Students shall receive credit for courses in only one of the preceding two sets.

Course Descriptions

PHYS 101 Introductory Physics I 4.0; 4 cr.
Measurements, motion in one dimension, vectors, motion in two dimensions, Newton's laws with applications, work and energy, circular motion, linear momentum and collisions, rotation and angular momentum, oscillations, gravity, and elements of fluid mechanics. Pre- or corequisite: MATH 101. Students shall receive credit for only one of PHYS 101 or PHYS 103. Annually.

PHYS 101L Introductory Physics Laboratory I 0.2; 1 cr.
Error analysis, measuring devices, speed and acceleration, measurement of gravitational acceleration, forces, friction, circular motion, conservation of momentum, conservation of energy, ballistic pendulum, rotation, and simple harmonic motion. Pre- or corequisite: PHYS 101. Annually.

PHYS 103 Physics for the Life Sciences 3.0; 3 cr.
Units and dimensions, scalars and vectors, kinematics in one and two dimensions, dynamics, work and energy, collisions, gravitation, and rotational motion. Students shall receive credit for only one of PHYS 101 or PHYS 103. Every term.

PHYS 103L Physics for the Life Sciences Laboratory 0.2; 1 cr.
Error analysis, measurements, position, speed and acceleration, ballistic pendulum static and dynamic forces, Atwood's machine, Linear Air Track I, collision, centripetal force and rotational inertia. Pre- or corequisite: PHYS 103. Annually.

PHYS 200 Understanding the Universe 3.0; 3 cr.
An introductory course in astronomy. Basic astronomical tools, properties of the earth, solar system, sun, electromagnetic radiation, properties and evolution of stars, and the Milky Way galaxy. The course is intended for students in the social sciences and the humanities. Every term.

PHYS 204 Classical Physics for Life Sciences 3.0; 3 cr.
Solids and fluids, thermal physics and processes, heat and heat engines, the laws of thermodynamics, gas dynamics, vibrations and wave phenomena, sound, reflection and refraction of light, mirrors and lenses, wave optics and optical instruments. Prerequisite: PHYS 103 (or equivalent). Annually.

PHYS 204L Classical Physics for Life Sciences Laboratory 0.3; 1 cr.
Error analysis, Bernoulli's Law, surface tension, coefficient of viscosity, thermal expansion, Boyle's law, heat engine, mechanical equivalent of heat, waves on a stretched string, standing waves in air columns, geometrical optics I: reflection and refraction, geometrical optics II: mirrors and lenses, interference and diffraction. Pre- or corequisite: PHYS 204. Annually.
PHYS 205 Modern Physics for Life Sciences 3.0; 3 cr.
Part I: Electric field, electric potential Gauss's law, capacitance, electric current and circuits and Ohm's law. Magnetic field, Ampere's law, electromagnetic induction, electromagnetism applied to biological systems. Part II: Introduction to relativity, atoms and atomic structure, nuclei, elementary particles and radioactivity. Prerequisite: PHYS 103 (or equivalent). Annually.

PHYS 205L Modern Physics for Life Sciences Laboratory 0.3; 1 cr.
Error analysis, capacitance and dielectric constants, basic oscilloscope operations, Wheatstone bridge, RC and RL circuits, measurements of magnetic induction fields, measurement of the charge to mass ratio of electrons, RC and RLC-circuits, Ohm's law, Planck's constant, atomic spectroscopy, transformers Pre- or corequisite: PHYS 205. Annually.

PHYS 206 Applied Physics for Life Sciences 3.1; 3 cr.
This course aims at providing students with the application of physical principles to medicine and healthcare sectors in developing new diagnostic tools, medical techniques, and treatment methods. Physics 206 is the second part of a non-calculus introductory course in physics designed primarily for students in the life sciences. The course stresses on how the laws of physics are correlated and explain some human body functions in particular fluid mechanics of blood and air, hearing and acoustic of the ear, vision optics, electrical signaling. Physics 206 will also shed light on modern medical diagnostic tools that have developed during the past century including X-rays, electric signaling EKG, ultrasound scans and doppler ultrasound, and magnetic resonance imaging. Prerequisite: PHYS 103 (or equivalent). Students who take PHYS 206 cannot receive credit for PHYS 204 and/or PHYS 205.

PHYS 206L Applied Physics for Life Sciences Laboratory 0.3; 1 cr.
Physics 206L is one credit 3 hour/week laboratory course designed primarily for students in the life sciences and it is premedical course. The experiments deal with fluids, sound waves, electricity and magnetism as well as modern physics. Pre- or corequisite: PHYS 206.

PHYS 210 Introductory Physics II 3.1; 3 cr.
Review of classical mechanics, fluid statics, fluid dynamics, temperature, heat and first law of thermodynamics, kinetic theory of gases, heat engines, entropy and second law of thermodynamics, general properties of waves, sound waves and resonances, light and optics, interference, diffraction, and polarization. Pre- or corequisite: MATH 201. Every term.

PHYS 210L Introductory Physics Laboratory II 0.3; 1 cr.
Error analysis, Atwood's Machine and motion down an incline, conservation of Mechanical energy, surface tension and viscosity, thermal expansion of solids, mechanical equivalent of heat, standing waves on a stretched string, standing waves in air columns, interference and diffraction, the spectrometer, Michelson interferometer. Pre- or corequisite: PHYS 210. Every term.

PHYS 211 Electricity and Magnetism 3.0; 3 cr.
Electrostatics, current, resistance, Ohm's law, Kirchhoff's laws, RC circuits, magnetic field, Ampere's law, Biot-Savart law, Faraday's law, LR circuit, RLC circuits, and a qualitative discussion of Maxwell's equations. Pre- or corequisite: MATH 201. Every term.

PHYS 211L Electricity and Magnetism Laboratory 0.3; 1 cr.
Error analysis, capacitance and dielectric constant measurements, electrical circuits and Wheatstone bridge, measurement of the force between two parallel current-carrying conductors, measurement of magnetic induction fields, basic oscilloscope operations, RL, RC, and RLC circuits, measurement of the e/m ratio of electrons, transformers, Ohm's Law and resistivity. Pre- or corequisite: PHYS 211. Every term.

PHYS 212 Modern Physics 3.0; 3 cr.
Special theory of relativity, introductory quantum mechanics, atomic physics, nuclear physics, and introduction to elementary particles and cosmology. Pre- or corequisite: MATH 201. Students cannot receive credit for both PHYS 212 and CHEM 218. Every term.

PHYS 214 Introduction to Vibrations and Waves 3.0, 3 cr.
This course aims to introduce students to the physical and mathematical properties shared by wave phenomena across scales and states of matter. It begins with the vibrations of a single particle, whether free or forced, with due consideration for resonances. It then moves on to collective vibrations of coupled systems of particles, with particular emphasis on normal modes of vibrations. Proper wave-like behavior will then appear in the continuous limit of the particle description and its properties (including reflection, transmission, refraction, polarization, interference, and diffraction to list a few). In support of the analytic (as opposed to descriptive) approach to the subject, advanced mathematical techniques (to do with ordinary differential equations, linear algebra, and Fourier analysis) will be introduced as and when needed. Annually.

PHYS 216 Mathematical Methods for Physics 3.0; 3 cr.
Vector analysis, tensors, linear operators, Eigenvalue problems, determinants and matrices, Sturm-Liouville problems, special functions, Fourier series and transforms, complex analysis. Prerequisite: MATH 202. Annually.

PHYS 217 Mechanics 3.0; 3 cr.
Kinematics of particles motion, Newtonian formulation of mechanics, integration of Newtonian equations of motion, Lagrangian formulation of mechanics, Hamilton dynamics, central forces, linear oscillations, nonlinear oscillations and chaos, collisions, non-inertial systems, coupled oscillations, and motion of rigid bodies. Prerequisite: MATH 202. Annually.

PHYS 218 Non-linear Dynamics 3.0; 3 cr.
The course explores nonlinearity and chaos in physical phenomena. Applications are drawn from classical and celestial mechanics, fluid mechanics and structural dynamics, nonlinear electronics, lasers, and coupled oscillators. The approach is thoroughly geometrical focusing on the phase space structure of dynamical systems, and progressing through systems of increasing dimension and complexity, from equilibria, their linear stability analysis, and bifurcations, to periodic solutions and their bifurcations, to the emergence and characterization of chaos, and universality within it. We will appeal to both analytical and computational methods, calling on illustrative hands-on experiments when appropriate. The course requires senior standing of physics majors, and is open, with instructor permission, to non-physics majors who have completed MATH 201, MATH 202, and PHYS 216 (or equivalent).

PHYS 220 Electromagnetic Theory 3.0; 3 cr.
Electrostatics: electric potential, Gauss' law, Poisson's and Laplace's equations, boundary conditions, electric currents, Faraday's law, Lenz's law, mutual inductance. Maxwell's equations and propagation of electromagnetic waves. Prerequisite: MATH 202. Annually.

PHYS 221L Junior Physics Laboratory 0.6, 3 cr.
This course is intended to help students acquire basic practical skills that are used in experimental physics. The course introduces students to some of the basic equipment that are used in this discipline. Experiments will cover a range of phenomena, including, electricity and magnetism, mechanics, optics, waves and modern physics. Prerequisite: Junior standing. Annually.

PHYS 222 Computational Physics 3.0; 3 cr.
Basics of numerical analysis: Numerical solutions of algebraic and transcendental equations, methods for solving systems of linear and differential equations and scholastic methods. Applications: planetary motion, simple models of stars, nonlinear dynamics and chaos, potentials and fields, waves, random systems, computational fluid dynamics, statistical mechanics (phase transitions, Ising model), molecular dynamics, and quantum mechanics. Prerequisites: CMPS 201 or EECE 230, MATH 201 and MATH 202. Annually.

PHYS 223 Physical Optics 3.0; 3 cr.
Wave theory of light, Maxwell's equations, superposition and polarization, interference, interferometers, diffraction, coherence, lasers, and holography. Annually.

PHYS 225 Introduction to Astronomy and Astrophysics 3.0; 3 cr.
Observation and instruments, photometry and magnitudes, radiation mechanisms, celestial mechanics, stellar spectra and structure, stellar evolution, Milky Way, galaxies, cosmology. Pre- or corequisites: MATH 201, MATH 202. Junior Standing. Annually.

PHYS 226 Solid State Physics 3.0; 3 cr.
Electrons in one-dimensional periodic lattice, vibrations in one-dimensional periodic lattice, geometrical description of crystals, free-electron theory in metals, excitons, plasmons, polarons, lattice dynamics, semi-conductors, magnetic ordering, superconductivity, and electron gas in a magnetic field. Prerequisites: PHYS 235 and PHYS 236. Annually.

PHYS 228 Electronics 3.0; 3 cr.
DC linear circuits, capacitors, inductors and transients, periodic waveforms, diodes, power supplies, operational amplifier, logic gates, timers, multiplexers, flip-flops, and counting circuits. Students cannot receive credit for this course unless they pass PHYS 228L. Annually.

PHYS 228L Electronics Laboratory 0.3; 1 cr.
DC measurements, periodic waveforms, power supplies, transients, frequency and period measurements, operational amplifiers, and some digital circuits. Pre- or corequisite: PHYS 228. Every term.

PHYS 231 Special Topics 3.0; 3 cr.
May be repeated for credit. Prerequisite: Consent of department.

PHYS 232 Special Topics 3.0; 3 cr.
May be repeated for credit. Prerequisite: Consent of department.

PHYS 235 Statistical Physics 3.1; 3 cr.
Boltzmann distribution, Gibbs distribution, thermal radiation, heat and work, kinetic theory of gases, entropy and temperature, statistical mechanics of semiconductors, kinetics of chemical reactions, and phase transitions. Prerequisite: Senior standing. Annually.

PHYS 236 Quantum Mechanics 3.0; 3 cr.
Fundamental concepts: Bras, Kets, matrix representation of operators, change of basis; quantum dynamics: time evolution of quantum mechanical systems, spin; translational and rotational symmetry: Schrödinger equation in one and three dimensions; spherical symmetric systems: three-dimensional oscillator, hydrogen atom; theory of angular momentum: rotation operator, addition of angular momenta; time-independent perturbation theory, Zeeman effect, Stark effect, spin-orbit coupling, time-dependent perturbation theory, variational methods. Prerequisites: PHYS 212 and PHYS 216. Annually.

PHYS 237 Introduction to Plasma Physics 3.0; 3 cr.
Basic description of plasma: occurrence in nature and laboratory; basic plasma characteristics, single particle motion in uniform, non-uniform and time-varying E and B fields. The fluid description and magnetohydrodynamic equations. Electrostatic, hydrodromagnetic and magnetosonic waves. Diffusion in weakly and fully ionized plasmas. Hydromagnetic equilibrium; classification of instabilities. Kinetic effects using the Vlasov and Fokker-Planck equations and Landau damping. Pre- and corequisites: PHYS 217 and PHYS 220. Annually.

PHYS 248 Undergraduate Seminar 1.0; 1 cr.
Prerequisite: Senior standing. Annually.

PHYS 249 Elementary Particle Physics 3.0; 3 cr.
The standard model of elementary particles and their interactions represent the core content of the course. Topics to be discussed include, but are not limited to, relativistic kinematics, the Dirac equation, internal and space-time symmetries, the quark model, gauge theories and the basic description of the electromagnetic, weak and strong interactions and their Feynman calculus, spontaneous breaking of symmetries and the Higgs mechanism. Prerequisites: PHYS 236 and/or senior standing. Annually.

PHYS 257L Advanced Laboratory 0.6; 3 cr.
Students perform a selection of six to eight experiments from the following list: transient and steady states of SH-oscillator, coupled oscillators, Frank–Hertz experiment, Planck constant, Currie temperature, magnetic susceptibility, Millikan's drop oil experiment, Hall effect, Faraday rotation, Johnson noise, atomic spectroscopy, Zeeman effect, Paramagnetic resonance, pulsed nuclear magnetic resonance, X-ray diffraction, Brownian motion and optical pumping. Prerequisite: PHYS 221L. Annually.

PHYS 299A Physics in Applications 1.0; 1 cr.
It is the first course in a series of two courses (PHYS 299A and PHYS 299B), taken in consecutive semesters. This is a capstone course required for Physics Majors and taken in two consecutive semesters. It includes lectures grouped in modules, a seminar, and a project. The objective is to integrate students' knowledge of the basic theoretical courses by exploring applications of Electromagnetic Theory, Quantum Mechanics, and Statistical Physics. The course material may reflect research interests of faculty members and is coordinated with experiments constituting the Senior Lab course and with the Computational Physics projects to emphasize the dynamics between theory, experiments, and computational work. The seminar is based on faculty presentations of original seminal papers pertaining to the course material, and project presentations by the students. The project could range from a computational exploration of a problem to designing a new experiment for a Junior or Senior Lab, or to designing a demonstration for the basic Physics courses. Every term.

PHYS 299B Physics in Applications 2.0; 2 cr.
It is a continuation of PHYS 299A. This is a capstone course required for Physics Majors and taken in two consecutive semesters. It includes lectures grouped in modules, a seminar, and a project. The objective is to integrate students' knowledge of the basic theoretical courses by exploring applications of Electromagnetic Theory, Quantum Mechanics, and Statistical Physics. The course material may reflect research interests of faculty members and is coordinated with experiments constituting the Senior Lab course and with the Computational Physics projects to emphasize the dynamics between theory, experiments, and computational work. The seminar is based on faculty presentations of original seminal papers pertaining to the course material, and project presentations by the students. The project could range from a computational exploration of a problem to designing a new experiment for a Junior or Senior Lab, or to designing a demonstration for the basic Physics courses. Prerequisite: PHYS 299A. Every term.

39 Credits in Physics

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (Min. 6)	Understanding the World (39), Quantitative Reasoning (6)	Community-Engaged Learning (3)
Lecture Courses (9+12+6 +33+3+ 12+9+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Two required courses	Nine required courses: PHYS 212, 214, 216, 217, 220, 222, 235, 236, PHYS 299A, PHYS 299B (27) Two elective physics from PHYS 218, 223, 225, 226, (228 + 228L),231, 232, 237, 249, or other selected topics (6) One Understanding the World from outside the major (3) Four free electives courses (12) from inside or outside the department Three required: MATH 201, 202, and CMPS 201, or EECE 230 (9)	Requirement course (3)
Laboratory (6)				Required Physics Labs: PHYS 221L(3), 257L(3) (6)	
Research Project				The following courses may include a research project: PHYS 222, 226, 231, 232, 235, 236, 249	

Department of Political Studies and Public Administration (PSPA)

Chairperson:	Geukjian, Ohannes
Professor:	Khashan, Hilal
Associate Professors:	Frangie, Samer; Geukjian, Ohannes; Haddad, Tania; Khodr, Hiba; Makdisi, Karim; Tell, Tariq
Associate Professor of Practice:	Bahout, Joseph
Assistant Professors:	Kosmatopoulos, Nikolas; Mouawad, Jamil
Distinguished Practitioner of Public Policy:	Nahhas, Charbel
Senior Lecturer:	Bayrakdarian, Nora
Lecturers:	Akoum, Waleed; Al Maleh, Rand; Awada, Ghada; Doueihy, Michel; Kachar, Simon; Muhanna, Zeina; Sfeir, Antoine; Shaar, Rima
Instructors:	Ajamian, Melissa; Hankir, Samer; Shibli, Rabih; Yacoubian, Vera

BA in Political Studies

BA in Public Administration

The Department of Political Studies and Public Administration (PSPA) offers two major programs: one leading to the degree of Bachelor of Arts in Political Studies and one leading to the degree of Bachelor of Arts in Public Administration. Students wishing to transfer to PSPA must secure and maintain the approval of the department and must satisfy the conditions detailed below. Acceptance to the department is subject to the availability of places.

Mission Statements

The mission of the BA program in Political Studies at AUB is to provide students with an understanding of the political ideas, institutions and processes that inform, shape, and regulate domestic and international politics. The core curriculum is designed to engage students in the critical analysis and assessment of the political world, and help them acquire the intellectual, practical and moral skills that are necessary for their development as future academics, civil servants, and responsible citizens. The program is committed to serving the university's liberal arts model of higher education, and provides students with the intellectual means to understand and reflect on major political issues that define their individual and communal life.

The mission of the BA program in Public Administration is to educate students, and help them develop knowledge, skills and abilities in the discipline of public administration. This includes teaching students to become innovative leaders by developing their managerial and analytic skills, thereby preparing them for professional success. The program is designed to provide students with in-depth knowledge and training geared towards the building of a generalist, academic, professional, and ethical background, and to enhance students' decision-making, analytical and interpersonal skills. We aim to increase our students' understanding of the political, constitutional, legal, economic, social, cultural, and organizational environments within which they will work.

Graduation Requirements

University Requirements

Language requirements: 6 credits of English and 3 credits of Arabic.

General Education requirements: Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits). At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Major Courses: 39 credits of PSPA courses, both for PS and PA majors.

Students majoring in Political Studies are required to complete 39 credits in the department, which must include PSPA 201, PSPA 202, PSPA 203, PSPA 210, PSPA 211, PSPA 213, and either PSPA 253 or PSPA 256. Six additional Political Studies courses, including one senior seminar, are required. These six courses can be selected from PSPA 256-214, PSPA 286, PSPA 288, PSPA 293-290, and PSPA 299. Students are expected to choose, after consultation with their advisor, four courses that count as free electives. Students majoring in Public Administration are required to complete 39 credits in the department, which must include PSPA 201, PSPA 202, PSPA 203, PSPA 212, PSPA 273, PSPA 276, and PSPA 277. Six additional courses are required. Four courses should be taken in one of the sub-fields (Public Management or Public Policy) and the remaining two courses in the other sub-field. The Public Management courses are PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 275, PSPA 278, PSPA 287, PSPA 289, PSPA 297 and PSPA 299. The Public Policy courses are PSPA 260, PSPA 261, PSPA 262, PSPA 263, PSPA 287, PSPA 289, PSPA 298, and PSPA 299. One of these courses should be a senior seminar (PSPA 297 or PSPA 298). PA majors are also required to take the following courses outside the department which are one economics course from the General Elective list, one course related to information technology (CMPS 206 or CMPS 209), one course related to statistical analysis (STAT 201, STAT 210, EDUC 227 or PSYC 213) and either SOAN 201 or PSYC 201. Students are expected to choose, after consultation with their advisor, three courses that count as free electives. All PSPA majors are recommended to complete PSPA 201, PSPA 202, and PSPA 203 by the end of their second term in the program. All PSPA majors must take ENGL 203 and ENGL 204 by the end of their third term in the program. PSPA majors whose PSPA average falls below 2.3 will be dropped from the program.

Transfer of Major

Transfer of Major within the Faculty of Arts and Sciences: Transfers to the PSPA major require a grade of C+ in PSPA 201 and PSPA 202 plus a minimum combined grade average of 2.3 in ENGL 203 and ENGL 204.

Transfer from one Faculty to Another within the University: Students who wish to transfer from one faculty to another must complete the application for transfer form available on AUBsis. Students must apply within the deadlines specified in the university calendar.

Minor in PSPA

Minors for PSPA Majors

Political Studies majors choosing to minor in Public Administration are required to take a minimum of 15 credits. The requirements are PSPA 212 plus four upper-level courses from the following list: PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 273, PSPA 275, PSPA 277, PSPA 278, PSPA 289, PSPA 297, PSPA 299. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Political Studies majors choosing to minor in Public Policy are required to take a minimum of 15 credits. The requirements are PSPA 260 and PSPA 276 plus three upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, PSPA 278, PSPA 297 or PSPA 298. No more than 9 credits may be used to satisfy a requirement for another major or minor.

PSPA students choosing to minor in Civil Society, Citizenship and the Nonprofit sector are required to take a minimum of 15 credits. The requirements PSPA 222 and PSPA 272 and three electives from the following list of courses: PSPA 202, PSPA 203, PSPA 233, PSPA 235, PSPA 254, PSPA 257, PSPA 260, PSPA 263, PSPA 289G, PSPA 299, ECON 232, ECON 237, MCOM 217, MCOM 252, SOAN 225, SOAN 226, SOAN 240, and SOAN 245.SOAN 245. No more than 12 credits can be taken from the same department. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Political Studies majors choosing to minor in International Law are required to take a minimum of 15 credits. The requirements are PSPA 225, and four upper-level courses from the following list: PSPA 223, PSPA 226, PSPA 228, PSPA 232, PSPA 233, PSPA 235, PSPA 239, PSPA 288 (if related to the minor's emphasis and approved by the PSPA Department), PSPA 293B, 293C, 293F, PSPA 299 (if approved by the PSPA Department) and SOAN 245. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Political Studies majors choosing to minor in International Law are required to take a minimum of 15 credits. The requirements are PSPA 225, and four upper-level courses from the following list: PSPA 223, PSPA 226, PSPA 228, PSPA 232, PSPA 233, PSPA 235, PSPA 239, PSPA 288 (if related to the minor's emphasis and approved by the PSPA Department), PSPA 293B, 293C, 293F, PSPA 299 (if approved by the PSPA Department) and SOAN 245. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Public Administration majors choosing to minor in Political Studies are required to take a minimum of 15 credits. The requirements are one of the following: PSPA 210, PSPA 211 or PSPA 213; and any four upper-level courses from the following list: PSPA 214-256, PSPA 286, PSPA 288, PSPA 290-293, and PSPA 299. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Minors for Non-PSPA Majors

Non-PSPA majors choosing to minor in Political Studies are required to take a minimum of 15 credits. The requirements are PSPA 201, one of the following: PSPA 210, PSPA 211 or PSPA 213, and any three upper-level courses from the following list: PSPA 214-256, PSPA 286, PSPA 288, PSPA 290-293, and PSPA 299. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Non-PSPA majors choosing to minor in Public Administration are required to take a minimum of 15 credits. The requirements are PSPA 202 and PSPA 212 plus three upper-level courses from the following list: PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 273, PSPA 275, PSPA 277, PSPA 278, PSPA 297, PSPA 289, PSPA 298, PSPA 299. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Non-PSPA majors choosing to minor in Public Policy are required to take a minimum of 15 credits. The requirements are PSPA 202, PSPA 260 and PSPA 276 plus two upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, PSPA 278, PSPA 297 or PSPA 298. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Non-PS majors choosing to minor in International Law are required to take a minimum of 15 credits. The requirements are: PSPA 213 and PSPA 225, plus three upper-level courses from the following list: PSPA 223, PSPA 226, PSPA 228, PSPA 232, PSPA 233, PSPA 235, PSPA 239, PSPA 288 (if related to the minor's emphasis and approved by the PSPA Department), PSPA 293B, 293C, 293F, PSPA 299 (if approved by the PSPA Department) and SOAN 245. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Non- PSPA students choosing to minor in Civil Society, Citizenship and the Nonprofit sector are required to take a minimum of 15 credits. The requirements are: PSPA 222 and PSPA 272 and three elective courses from the following list of courses: PSPA 202, PSPA 203, PSPA 233, PSPA 235, PSPA 254, PSPA 257, PSPA 260, PSPA 263, PSPA 289G, PSPA 299, ECON 232, ECON 237, MCOM 217, MCOM 252, SOAN 225, SOAN 226, SOAN 240, and SOAN 245. No more than 12 credits can be taken from the same department. No more than 9 credits may be used to satisfy a requirement for another major or minor.

Course Descriptions

PSPA 101 Issues in Contemporary Politics 3.0; 3 cr.
A course that examines the global context of politics, focusing on the changing world order in the twentieth century. Special attention is given to themes like democratization, civil society, ethnic conflict, human rights, and globalization. Every term.

PSPA 201 Introduction to Political Science 3.0; 3 cr.
An introduction to the study of politics with emphasis on the basic concepts, ideas, and issues relating to the process of government in the modern state. Every term.

PSPA 202 Introduction to Public Administration 3.0; 3 cr.
A course on the nature of public administration. Basic concepts, processes, and approaches in the field of public administration are introduced so that the student develops an appreciation for the role of public administration in modern society. Every term.

PSPA 203 Research Methods 3.0; 3 cr.
A course that focuses on the problems involved in asking and answering questions about political science and public administration. This course presents the various analytical frameworks and methodological tools used for this purpose with emphasis on empirical approach, data collection, and analysis. Students cannot receive credit for both SOAN 210 and PSPA 203. Every term.

PSPA 210 Introduction to Political Thought 3.0; 3 cr.
An introduction to the main Western and Islamic traditions in political philosophy and political theory.

PSPA 211 Introduction to Comparative Politics 3.0; 3 cr.
A survey of concepts and issues in comparative politics. This course acquaints the student with basic theoretical frameworks for the study and analysis of political phenomena, and establishes criteria for comparing political systems. This course also closely examines the application of these concepts, frameworks, and criteria in selected countries. Every term.

PSPA 212 Contemporary Trends in Public Administration and Management 3.0; 3 cr.
A course that deals with the contemporary transformation of the public sector and its relationship with government and society. This course evaluates managerialism in the public sector, privatization, and entrepreneurial government. Every term.

PSPA 213 Introduction to International Politics 3.0; 3 cr.
A survey of the basic forces and factors determining relations among states, with special emphasis on the international system, foreign policy, national power, the restraints on determinants of state action, contemporary problems and major issues faced by states, and the patterns of interaction that prevail among states. Every term.

PSPA 214 Early and Mediaeval Islamic Thought 3.0; 3 cr.
The course is an introduction to early and classical Islamic political thought. It focuses on the history, origins, developments and objectives of Islamic political history, theology, jurisprudence and politics as they relate to the state, society, and relations with non-Muslims. The course analyzes the essential concepts and events that make the political core doctrines of Islam: a political system, a political theology and ideology, and a theory of international relations. Comparisons and contrasts between different Islamic schools are to be explored. Occasionally.

PSPA 215 Modern Islamic Thought 3.0; 3 cr.
The course is a survey that focuses on major political and ideological issues in the modern world of Islam and deals analytically with the major doctrines, movements, and trends that have been developed during the 19th and 20th centuries. The course starts with the discussion of the ideological and political doctrines of Islamic reformers, then moves to discuss the rise of Islamic movements and their ideologies. Issues like Islamic government, state, religion, revolution, nationalism, and relations with the West are to be discussed. Annually.

PSPA 216 Western Political Thought from Antiquity to the Renaissance 3.0; 3 cr.
A survey of the main Western traditions, philosophies, and themes in political thought from Greek Antiquity to the Renaissance. The course will combine an in-depth analysis of the main philosophical concepts of the past that are still relevant to contemporary political thought and politics, with a historical analysis of the intellectual, social, and political context in which they emerged and for which they were constructed. Special focus will be given to the Greek polis and the emergence of a discourse on democracy, the relationship between politics and ethics, the search for good government and the just society, and the shift to early Realism in the context of the emergence of the modern state in Europe. Occasionally.

PSPA 217 Modern and Postmodern Western Political Thought 3.0; 3 cr.
A survey of the main Western traditions, philosophies, and themes in political thought from early European Modernity and the Enlightenment to the contemporary era, including Postmodern philosophies. The course will combine an in-depth analysis of the modern and postmodern paradigms in political philosophy, with a historical analysis of the intellectual, social and political context that led to the critique of the modern nation-state, nationalism, and democracy, and the search for new normative orders. Annually.

PSPA 218 Social Theories 3.0; 3 cr.
A survey of the main social theories that have contributed to an empirical understanding of the political at different levels of analysis and from different conceptual frameworks. The course will emphasize an interdisciplinary approach, through a comparison of theories produced in different disciplines (political science, sociology, anthropology, political psychology, economics) that focuses on different objects of study (the state, the community, social classes, the individual). Annually.

PSPA 219 Arab Political Thought and Ideologies 3.0; 3 cr.
The aim of the course is to explore various intellectual and political debates in the modern Arab world. The course will provide an overview of the development of modern Arab political thought and will present some of the main political, intellectual, and academic debates in this domain. Topics covered in this course include Arab nationalism, Marxism and Liberalism, modernity and tradition, secularism and Islam, Orientalism and the West, and other topics. Annually.

PSPA 220 Globalization and Culture 3.0; 3 cr.
This course offers a critical exploration of the cultural dynamics of globalization and the politics of the globalization of culture. It also addresses the spread of (and reaction to) American popular culture abroad and the impact of globalization on American culture and identity. Occasionally.

PSPA 221 Theories and History of the State 3.0; 3 cr.
The aim of the course is to explore "the state" as a political construct and to provide a comparative survey of experiences of state-building in the Middle East (including Lebanon). Topics covered include the history of state formation, state-society relations, authoritarianism and democratization, the impact of globalization on the state, and related issues. Occasionally.

PSPA 222 Democracy, Civic Engagement and Leadership 3.0; 3 cr.
The course will introduce students to the principles and processes of civic engagement and leadership within democratic and democratizing systems of governance, and will help them understand the theoretical and practical issues related to the practice of participatory democracy from a comparative perspective. The discussion of the main features of the democratic system will be complemented with an extensive review of specific cases that are relevant to understand the problems that face civic engagement and leadership in different socio-political and cultural contexts. Annually.

PSPA 223 Constitutional Law 3.0; 3 cr.
A course that examines the constitutions and the development of constitutional mechanisms and practices in selected countries, with a focus on the Lebanese constitutional system. Constitutional mechanisms in general and institutional variables are discussed as well as their impact on public policy, democracy, and political stability. Every term.

PSPA 225 Public International Law I 3.0; 3 cr.
A course introducing the basics of public international law, including its origins, purpose, sources, subjects, and response to international wrongful acts. It explores case studies to illustrate key points. The aim of this course is to build students' understanding of the modern international legal order and its most important principles, and to contextualize its relationship with international politics. Annually.

PSPA 226 Public International Law II 3.0; 3 cr.
A course that, building upon PSPA 225's introduction, deals in more depth with some of the most important fields of public international law such as diplomatic relations, the law of the

sea, the regulation of the use of force, international humanitarian law, human rights, international justice or the development of international criminal law. This course makes extensive use of recent case studies and entails an important research component as it deals with some of the most significant developments and debates in contemporary international law. Prerequisite: PSPA 225. Occasionally.

PSPA 228 International Security 3.0; 3 cr.
A course analyzing major issues in international security, including arms control, disarmament, terrorism and environmental degradation in both theory and practice. It covers both traditional and non-traditional security perspectives. Occasionally.

PSPA 229 Water Politics and Policy 3.0; 3 cr.
Water is the key to life, and yet it is a resource that is exploited unevenly across and within states. This course examines key issues of water conflict, cooperation, security and development in both international and domestic spheres. Occasionally.

PSPA 231 Palestinian and Israeli Politics 3.0; 3 cr.
A survey of Palestinian and Israeli politics—political systems, institutions, parties, and processes of governance—in the historical context of the partition of Palestine, the proclamation of the state of Israel, and the establishment of the Palestinian Authority. The course will cover contemporary issues pertaining to the functioning of both systems, to their relationship at the political, economic, (para)military, and territorial levels, as well as the impact of local, regional, and international negotiations on the future political and legal development of the region. Occasionally.

PSPA 232 Conflict and Conflict Regulation 3.0; 3 cr.
A course that contextualizes and explores domestic, regional, and international conflicts as well as the mechanisms for their management or resolution. It focuses on such issues as the linkages between internal and external sources of conflict, the contested nature of conflict resolution concepts, peacemaking, and peace-building. Every term.

PSPA 233 International and Regional Organizations 3.0; 3 cr.
This course explores the theories, institutional structures, political processes, role and impact of international and regional organizations within the larger context of world politics. Every term.

PSPA 234 Transnational Politics 3.0; 3 cr.
This course explores issues of global governance beyond the traditional intergovernmental framework. It focuses on the increasingly visible role of non-state actors (social movements, NGOs, global media, transnational corporations) and transnational politics in shaping contemporary global politics. The course investigates whether the process of contemporary globalization has given rise to global civil society. Annually.

PSPA 235 Human Rights and International Politics 3.0; 3 cr.
A course that examines the development and relevance of institutions and instruments concerned with human rights, and then considers problems of human rights issues in selected countries and their impact on regional and global actors. Every term.

PSPA 236 The Arab-Israeli Conflict 3.0; 3 cr.
A survey of the conflict over Palestine since the 19th century up to the contemporary period. This course focuses on the origins and evolution of the Arab-Israeli conflict both in its regional and international dimensions, covering topics such as the colonial roots, the formation of the state of Israel, the PLO, the 1967 war up to the second Intifada. Every term.

PSPA 237 The Modern Middle East in International Politics 3.0; 3 cr.
This course examines the place of the "Middle Eastern" system of states in the international system and in relation to US foreign policy towards the region. It covers the legacies of Western colonialism, Arab nationalism, the Cold War and the continuing intervention of external powers (especially the US), the geopolitics of oil, and the rising influence of Islamist movements and non-state actors. Annually.

PSPA 238 International Political Economy: From Imperialism to Globalization 3.0; 3 cr.
This course examines the development of the modern world economic system through an analysis of its main characteristics and an overview of the theories relevant to its understanding. Issues covered in this course include imperialism, colonialism, the international market, globalization, the influences of the world economic system on states and the North-South divide. Annually.

PSPA 239 International Environmental Politics 3.0; 3 cr.
This course serves as an introduction to the field of international environmental politics, exploring the relationship between global political forces and environmental change. A central goal is to critically analyze how environmental problems are framed and solutions found. The course examines the rise of environmentalism in both the North and the South; the emergence of liberal and radical environmental discourse; and the formulation, negotiation and implementation of international environmental regimes and sustainable development policies. Relevant case studies include the international trade in hazardous waste and endangered species; the politics of whaling, ecotourism, GMOs, and climate change; the management of biodiversity, fisheries, ocean and forest regimes; and the relationship between environment and security. Annually.

PSPA 250 Politics of Emerging Countries 3.0; 3 cr.
A survey of politics in key emerging economies such as the BRIC states (Brazil, Russia, India, and China) and others including South Africa and Mexico. The course examines the role of these emerging economies in world politics and their policy-making structures. Annually.

PSPA 251 Politics and Government: United States of America 3.0; 3 cr.
A survey of the main features of the American political system, including the foreign policy making process. Annually.

PSPA 252 European Politics 3.0; 3 cr.
A course that examines contemporary European politics with an emphasis on the European Union, its governance structure, and external relations (particularly toward the Middle East). Occasionally.

PSPA 253 Politics and Government: Middle East 3.0; 3 cr.
A survey of political institutions and processes in the Middle East, with an emphasis on social and political development, the policy-making process and international affairs. Annually.

PSPA 254 Political Development and Social Change 3.0; 3 cr.
A survey of major issues and controversies in political development, theories of social change, and their relevance to developing countries. Topics covered by this course include modernization, state-building, democratization, revolutions, conflicts, authoritarianism, social movements and civil society. Occasionally.

PSPA 255 Islamic Political Institutions 3.0; 3 cr.
A survey that introduces the manner in which Islamic Shari'a was introduced into the political life of the nation-states in the Middle East. It focuses on the causes for its inclusion or exclusion in the constitutions, political institutions and processes, and courts in the Middle East, with

an emphasis on legislative process, personal status code, criminal code, as well as social and political development, and their impact on policy-making processes and international relations. Occasionally.

PSPA 256 Politics in Lebanon 3.0; 3 cr.
An overview of Lebanese politics in Mount Lebanon from the mid-nineteenth century to the formation of the Republic of Lebanon. This course deals with the origins, evolution, and workings of the confessional system with emphasis on the period after independence, from the civil war to the present. In addition, it focuses on the main political and social movements that marked Lebanese politics. Every term.

PSPA 257 Regional and Local Administration 3.0; 3 cr.
A course that deals with the legal aspects, organization, and theories of regional and local administration. This course examines issues of centralization-decentralization, central-regional-local government relations, and balanced development at the national level. Annually.

PSPA 258 Comparative Public Administration 3.0; 3 cr.
An introduction to the governmental, administrative, and political systems of both developed and underdeveloped countries with a focus on political systems and their manifestation in administrative systems. The objectives of this course center upon comparing and contrasting issues and concerns central to public administration systems within a selected set of countries worldwide. To attain these objectives the course will explore an array of interrelated questions and issues such as governance in contemporary societies, including administrative reforms, privatization, 'empowerment', the impact of globalization on state administrative structures and policies, devolution, and other concerns relevant to public sector administrators. Annually.

PSPA 259 Public Administration in Lebanon 3.0; 3 cr.
A course that examines the legal aspects, environment, scope, structure, and problems of public administration in Lebanon, with special emphasis on administrative reforms and their institutional products. Annually.

PSPA 260 Introduction to Policy Analysis 3.0; 3 cr.
This is an introductory course to policy analysis. Students should be familiar with the basic concepts and terminology of public policy and public administration. This course provides students with both essential and more advanced methods used in public policy analysis. It covers important components of the process of policy analysis such as identifying data sources and weighing the utility of data; establishing criteria for analyzing policies; assessing policy alternatives; choosing among policies; monitoring policy implementation; and evaluating policies. Prerequisite: PSPA 276 Annually.

PSPA 261 Applied Research Methods in Public Policy 3.0; 3 cr.
This course covers the fundamentals of research design in the social sciences in general. It introduces students to the several quantitative methods utilized in the field of public policy in addition to the use of computer resources in policy analysis. Students are assumed to have prior basic knowledge of the scientific methodologies. Prerequisite: PSPA 276 Annually.

PSPA 262 Political and Agency Management Aspects of Public Policy 3.0; 3 cr.
The purpose of this course is to introduce students to the different organizational and political factors that are involved in the policy-making process. This course is interdisciplinary in nature. It draws upon different theoretical frameworks and empirical scholarly works from several disciplines, and includes case studies. The course focuses on organizational, communicative, and controlling techniques and relevant core competencies for the analysis and solution of problems. Prerequisite: PSPA 276 Annually.

PSPA 263 Public Policy and the Legal Framework 3.0; 3 cr.
This course introduces students to the legal framework of policy formulation and policy implementation. The students will become familiar with legal materials related to the different aspects of the public policy-making process. In addition, the course focuses on the relationships among the lawmaking agencies on the one hand and their relation to the policy-making entities. Specific case studies are included to explore these relationships. Prerequisite: PSPA 276 Annually.

PSPA 264 Public Policy and Activism 3.0; 3 cr.
This course focuses on the role of activists in bringing about policy change and the impact of the different types of activism on public policy. This course provides a realistic brief introduction to how public policy is made. It examines how people (voters, activists, elites, lobbyists, politicians, bureaucrats, and judges), organizations (interest groups, firms, unions, foundations, think tanks, political parties, and the media) and political institutions (Congress, the presidency, the bureaucracy, and the judiciary) interact to create and implement public policy. It further explores how one specific group made out of activists whether employed outside or inside the public sector, can shape policy agendas and influence decisions. Students will not only gain exposure to the theory and literature on policy formulation and the actors involved but also on the politics of policymaking. It covers policy activism and policy advocacy initiatives at local, regional, national, and international scales. It analyzes the relationship between selected social/political movements, advocacy groups and different forms of activism, that are considered legitimate actors, and the policy process and outcome.

PSPA 270 State Institutions and Civic Activism: Organization and Mobilization 3.0; 3 cr.
This course is focused on examining the nexus of relationships and trajectories of influence between collective action groups and state institutions. The course analyzes various forms of collective action and the role of state institutions in shaping different modes of mobilization. The course focuses on enabling students to think critically about strategies and approaches to social movements and political protest by incorporating an understanding of state structures and power dynamics. The course uses experiential learning methods and interdisciplinary theories to help students reflect on real-life case studies inspired from the context of the Middle East and North Africa region.

PSPA 272 The Non-Profit Sector: Formation, Leadership and Governance 3.0; 3 cr.
This course focuses on the economic, social, and legal foundations of the nonprofit sector. The ways in which nonprofit organizations relate to the public and private sectors and the diversity and scope of the nonprofit sector are examined with primary focus on the functions performed by nonprofit organizations and on various patterns of community actions taken in different societies. Annually.

PSPA 273 Human Resources and Personnel Administration 3.0; 3 cr.
A course that examines theories, practice, and problems relating to human resources and personnel administration. This course focuses on key aspects of human resources, planning, and their implications on public policy. Annually.

PSPA 274 Public Administration and Non-State Actors 3.0; 3 cr.
This course explores the various ways in which non-state actors engage with the state. It focuses on the internal dynamics of local relationships between the government and non state actors and offers insights into the interactions between them. It will review the opportunities and constraints of different types of non-state actors (e.g. NGOs, trade unions, employer groups, multinational corporations, thinks tanks; regulatory bodies; rating agencies) within different levels of governance and organizations.

PSPA 275 Organization and Management 3.0; 3 cr.
A survey of the concepts, principles, and techniques of organization and management with special emphasis on questions of applicability. In this course students will develop attitudes and acquire skills that should enable them to administer organizations effectively and efficiently. Students cannot receive credit for both MNGT 215 and PSPA 275. Annually.

PSPA 276 Public Policy 3.0; 3 cr.
A course that analyzes the nature, scope, and performance of public policy. This course examines the different approaches and models of public policy as well as the actors, instruments, and problems involved; the course draws on specific case studies. Annually.

PSPA 277 Public Budgeting 3.0; 3 cr.
A survey of the principles and problems of financial organization and management in the public service with emphasis on fiscal planning, formulation and execution of the budget, financial accountability, control, and other aspects related to the role of the budget in development. Annually.

PSPA 278 Administrative Ethics and Controls 3.0; 3 cr.
This course addresses the moral challenges facing leaders in the public sector. It analyzes the formal and informal means aiming at promoting responsiveness and responsibility in Public Administration. It examines the values and virtues important to sustain ethical leadership, as well as strategies to build strong institutional cultures and support ethical practices in institutions. Students will learn how to identify moral issues in public life and public management. Occasionally.

PSPA 286 Tutorial in Political Studies 3.0; 3 cr. (each)
This course is designed to allow Political Studies students to pursue a course of directed study with PSPA faculty members. It may consist of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis. Students who are beginning their senior year may petition the department for course approval. Occasionally.

PSPA 287 Tutorial in Public Administration 3.0; 3 cr. (each)
This course is designed to allow PA students to pursue a course of directed study with PSPA faculty members. It may consist of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis. Students who are beginning their senior year may petition the department for course approval. Occasionally.

PSPA 288 Special Topics in Political Studies 3.0; 3 cr. (each)
May be repeated for credit. Special Topics courses do not count as a Senior Seminar. Every term.

PSPA 289 Special Topics in Public Administration 3.0; 3 cr. (each)
May be repeated for credit. Special Topics courses do not count as a Senior Seminar. Every term.

PSPA 290 Senior Seminar in Social and Political Thought 3.0; 3 cr. (each)
May be repeated for credit. Every term.

PSPA 291 Senior Seminar in Middle Eastern Politics 3.0; 3 cr. (each)
May be repeated for credit. Every term.

PSPA 292 Senior Seminar in Comparative Politics 3.0; 3 cr. (each)
May be repeated for credit. Every term.

PSPA 293 Senior Seminar in International Politics 3.0; 3 cr. (each)
May be repeated for credit. Every term.

PSPA 297 Senior Seminar in Organization Theory 3.0; 3 cr.
This senior seminar provides an examination of the development, theoretical structure, major concerns, areas of emphasis and debates in the field of organization theory, from its origins to the present. It takes an interdisciplinary approach and covers the body of empirical findings relevant to organization and management theory, practices and prescriptions. It puts emphasis on those ongoing findings and elements of theory that impact the contemporary study, research, and philosophy in the field of public administration. Annually.

PSPA 298 Senior Seminar in Public Policy and Administration 3.0; 3 cr.
This course focuses on particular public policy issues. It explores the major debates, both theoretical and applied that frame contemporary discussions about public policy. The seminar addresses several topics such as Human Rights policy, Poverty policy, Environmental policy, and Political advocacy. Prerequisite: PSPA 276. Annually.

PSPA 299 Internship Program 3.0; 3 cr.
A course that explores politics and public administration through a variety of work experiences, both governmental and nongovernmental. Students are expected to perform work for academic credit under the guidance of a full-time PSPA faculty member. As part of their course requirements, students will regularly meet with the faculty member sponsoring the course and submit written reports based on their experiences during the internship. Strongly motivated junior and senior students with a highly relevant internship may petition the department for internship approval. Students must enroll in the internship program the term they complete the internship. Annually.

Major in Political Studies: 39 Credits in Political Studies

Modes of Analysis	Understanding Communication - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individuals (39+6)	Understanding the World (39), Quantitative Reasoning (9:3/6+3/6)	Community-Engaged Learning (3)

Lecture Courses (9+12+6 +36+12+9)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Two approved Societies and Individuals courses Seven required PSPA courses: PSPA 201(3), 202(3), 203(3), 210(3), 211(3), 213(3) and either 253(3) or 256(3) (21 credits) Five required PSPA courses: PSPA 214(3), 215(3), 216(3), 217(3), 218(3), 219(3), 220(3), 221(3), 222(3), 223(3), 225(3), 226(3), 228(3), 229(3), 231(3), 232(3), 233(3), 234(3), 235(3), 236(3), 237(3), 238(3), 239(3), 250(3), 251(3), 252(3) 253(3), 254(3), 255(3), 256(3), 286(3), 288(3), 299(3) 288(3) 15 credits	One approved quantitative reasoning general education courses (3 credits) Two approved understating the world general education courses (6 credits)	Requirement course (3)
Senior Seminar (3)			One approved PS Senior Seminar:PSPA 290(3), 291(3), 292(3), or 293(3) (3credits)		
Free Electives	Four approved courses that are numbered 200 and above (12 credits)				

Major in Public Administration: 39 Credits in Public Administration

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (39+6)**	**Understanding the World (39), Quantitative Reasoning (9:3/6+3/6)**	**Courses outside the major (3)**	**Community-Engaged Learning (3)**
Lecture Courses (9+12+6 +39+9+ 3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	One required economics course from the approved General Education list (3), and either SOAN 201(3) or PSYC 202(3) (6 credits) Seven required PSPA courses: PSPA 201(3), 202(3), 203(3), 212(3), 273(3), 276(3) and 277(3) (21 credits). Five required PSPA courses in either: Public Management: Three courses from PSPA 222(3), 257(3), 258(3), 259(3), 272(3), 275(3), 278(3); and two courses from PSPA 260(3), 261(3), 262(3), 263(3), 287 (3), 289 (3) (15 credits); or	Two approved Understan- ding the World General Education courses (6 credits) One course related to information technology: CMPS 206(3) or CMPS 209(3) (3 credits).	One course related to statistical analysis: STAT 201(3), STAT 210(3), EDUC 227(3), or PSYC 213(3) (3 credits).	Requirement course (3)

			Public Policy: Three courses from PSPA 260(3), 261(3), 262(3), 263(3) and two courses from PSPA 222(3), 257(3), 258(3), 259(3), 272(3), 275(3), 278(3), 287(3), 289(3) (15 credits).			
Senior Seminar (3)			One approved PA Senior Seminar: PSPA 297(3) or 298(3) (3 credits).			
Free Electives	Four approved courses that are numbered 200 and above (12 credits)					

Department of Psychology

Chairperson:	Dietrich, Arne
Professor:	Dietrich, Arne
Assistant:	Agopian, Sarine; Ayoub, Mona; Badaan, Vivienne; Bosqui, Tania; Ismail, Ghena; Saadeh, Sabine
Lecturers:	Awaida, May A.K.; Fisher, Jennifer; Ouweidat, Hala
Instructors:	Bassil, Margaret; Majzoub, Hana
Professor Emeritus:	Kazarian, Shahe

The Department of Psychology offers programs leading to a BA degree in psychology and to an MA degree in psychology.

BA in Psychology

Mission Statement

The discipline of psychology is dedicated to increasing the scientific understanding of behavior and mental processes at the intrapersonal, interpersonal and group level, and to the application of that understanding to enhance the functioning of individuals, groups, and society. In line with this mission, the undergraduate program in Psychology has a threefold mission: to advance and transmit knowledge related to the nature of psychological processes and functioning, to provide a strong foundation in the basic knowledge and skills necessary for research in psychology, and to sensitize students to the applications of psychology in the wider community. This mission embodies the main elements of AUB's mission, which are to foster freedom of thought, respect for diversity, critical thinking, personal integrity, and civic engagement.

Requirements for a BA degree in Psychology

Admission to the Psychology program requires a grade of B or more in PSYC 101 or PSYC 201, a minimum grade of B in ENGL 204, and an overall average above 3.0 for transfers. Meeting the minimum requirements for joining the Psychology Department does not guarantee acceptance. Transfer to Psychology from other departments within the university is academically competitive and requires departmental approval. Students admitted as sophomores directly into the program must score a B in PSYC 201 and ENGL 204 as well as maintain a minimum average of 2.3 in their psychology courses by the end of their third regular term at AUB. Students seeking to be readmitted to the program after being dropped must meet transfer requirements. For purposes of meeting departmental admission requirements, students are not permitted to take PSYC 101 or PSYC 201 more than twice. While completing PSYC 101 qualifies a student to meet one of the admission requirements to the major, 100 level courses will not be counted towards a major requirement. Prospective majors who obtain a grade below D in PSYC 101 or PSYC 201 will not be permitted to take the course a second time for the purpose of meeting the departmental admission requirements. Requirements for majors

include PSYC 101 or PSYC 201, PSYC 280, PSYC 282, PSYC 284, and PSYC 288. In addition to these required courses, the student must select nine courses from the following categories: Category 1 (3 out of 5 are required, but all can be taken for credit)(9): PSYC 210(3), PSYC 212(3), PSYC 214(3), PSYC 215(3), and PSYC 216(3); Category 2 (3 out of 5 are required, but all can be taken for credit)(9): PSYC 220(3), PSYC 222(3), PSYC 224(3), PSYC 226(3), and PSYC 229(3); Category 3 (the remainder are 9): PSYC 230(3), PSYC 232(3), PSYC 234(3), PSYC 235(3), PSYC 236(3), PSYC 237(3), PSYC 238(3), PSYC 239(3), PSYC 240(3), PSYC 290(3), and any course in Category 1 and 2 that has not already been chosen.

In addition to these required courses, the student must complete 3 credits in Quantitative Thought numbered 200 or above. Also required are 6 credits in Natural Sciences. A biology course is recommended.

The requirements for a BA degree in Psychology are 90 credits for students entering the department at the sophomore level, including 42 credits in the major. The distribution of university requirements is as follows:

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits). Also note that the Societies and Individuals must be an approved General Education course from outside the major.

A minor in psychology requires 15 credits: PSYC 201, PSYC 280, and three electives from PSYC 210–240. A minimum cumulative average of 2.7 is required.

A cognitive science minor (suspended as of Fall 2020-21) requires 18 credits: PSYC 237 is required. PSYC 237 cannot be counted as a psychology course for the purpose of this requirement. The remaining 15 credits must be chosen from the following courses: BIOL 240, 243, 244, CMPS 201, 211, 261, 262, EDUC 215, 221, ENGL 227, 228, 232, 284, 294, PHIL 211, 220, 221, 222, 223, 257 or 258 (but not both), PSYC 210, 222, 224, 226, 229, 280, on condition that the 15 credits chosen span at least three disciplines. A student may choose a special topics course not listed above (e.g., 290 course codes), provided the topic is within the purview of cognitive science, upon approval of the course coordinator. For single major students, only 3 credits of the 15 credits taken for the minor may count toward the major.

For double major students, 6 credits taken for the minor may count toward the majors, with no more than 3 credits per major. Students are encouraged to take PSYC 237 early in the minor.

Course Descriptions

PSYC 101 Freshman Introduction to Psychological Science 3.0; 3 cr.

A survey of the principles and concepts of modern psychological science. Emphasis is placed on critically examining empirical research investigating human behavior and mental processes. Students who take this course cannot get credit for PSYC 201. Every term.

PSYC 201 Introduction to Psychological Science 3.0; 3 cr.
A survey of the principles and findings of modern psychological science. Emphasis is placed on critically examining empirical research investigating human behavior and mental processes. Students who receive credit for PSYC 101 cannot receive credit for PSYC 201. Every term.

PSYC 210 Lifespan Developmental Psychology 3.0; 3 cr.
A course on psychological development from the prenatal period to late adulthood. Students who receive credit for EDUC 225 cannot receive credit for PSYC 210. Prerequisite: PSYC 201 or PSYC 101. Every term.

PSYC 212 Social Psychology 3.0; 3 cr.
A course on the scientific study of how individuals think, feel, and behave in regard to other people, and how individuals' thoughts, feelings, and behaviors are affected by other people. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 214 Adult Abnormal Psychology 3.0; 3 cr.
An introduction to the research, history, and theories of abnormal behavior in adults and a critical examination of the definition, classification, prevalence, etiology and treatment of adult abnormal behavior. Topics covered include anxiety, post-traumatic stress, depression, mania, borderline personality, substance abuse, schizophrenia, and sexual abnormalities. Prerequisite: PSYC 201 or PSYC 101. Every term.

PSYC 215 Child Abnormal Psychology 3.0; 3 cr.
An introduction to the psychological disorders of childhood and adolescence, including attention deficit hyperactivity disorder, conduct disorders, autism, mood and anxiety disorders. The course begins with an understanding of abnormal behavior and proceeds to cover symptomatology, the major theories of causality, and treatment interventions. Prerequisite: PSYC 201 or PSYC 101.Every term.

PSYC 216 Personality Psychology 3.0; 3 cr.
An introduction to the research, theories, and measurement of personality with a critical examination of the influence of personality on behavior. The course surveys biological, psychodynamic, trait, humanistic, behavioral, social learning, and cognitive perspectives to the understanding of human personality and their application to individuals and organizations. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 220 Psychology of Learning and Behavior 3.0; 3 cr.
A course on the principles of learning and behavior. The psychology of learning, or behavioral psychology, introduces students to the psychology of learning and behavior analysis by examining the classical and operant (instrumental) conditioning paradigms from an experimental perspective. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 222 Behavioral Neuroscience 3.0; 3 cr.
An introduction to the neural basis of the mind and behavior. The course surveys the structure and organization of the human brain and examines how complex behavior and mental processes arise from it. Prerequisite: PSYC 201 or PSYC 101. Registration for PSYC 222 is not open to Biology students who may register for the cross-listed course, BIOL 243. Annually.

PSYC 224 Sensation and Perception 3.0; 3 cr.
A course on how humans sense and perceive the environment. Topics covered include the anatomy and physiology of the sensory systems, types of stimuli affecting sensory systems, higher perceptual processing, and current knowledge and theories of our perceptual abilities. The course also emphasizes the relationships between perceptual processes and other higher cognitive functions. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 226 Cognitive Psychology 3.0; 3 cr.
An introduction to human cognitive processes, including perception, attention, memory, language, imagery, categorization, problem solving, reasoning and decision-making. These cognitive processes are examined with regard to human brain functioning. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 229 Cognitive Neuroscience 3.0; 3 cr.
An advanced course on the underlying neural mechanisms of higher mental function. Topics include brain systems implementing memory, language, decision-making, control of action, social cognition, emotions, creativity, cultural evolution, consciousness, cognitive control and brain-computer interfaces. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 230 Clinical Psychology 3.0; 3 cr.
An introduction to the history and development of the science and practice of clinical psychology with a critical examination of training models, approaches to clinical problems, methods of assessment, choice of empirically validated interventions, prevention strategies and career opportunities. The course surveys clinical and research activities (assessment, therapy, and consultation), settings (clinical, hospital, school, court, and private practice), and professional issues (roles, ethics, and laws). Prerequisite: PSYC 214 or PSYC 215. Annually.

PSYC 232 Health Psychology 3.0; 3 cr.
An introduction to the field of health psychology with a critical examination of the biopsychosocial model of health and the ecological model of health outcomes. The course explores the impact of five systems on individual health outcomes: the individual (including physiology), the family/ community, physical and social environments, healthcare systems and health policy. A variety of infectious diseases and chronic illnesses will be used to illustrate the roles of these systems in explaining health. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 234 Positive Psychology 3.0; 3 cr.
An introduction to the history and development of the scientific study of positive experiences, positive traits, and positive institutions with a critical examination of the field's theoretical and philosophical assumptions, methods of assessment, and applications to promote personal growth and fulfillment. The course surveys such topics as personal strengths, optimism, resilience, gratitude, forgiveness, humor, love, sexual intimacy, emotional intelligence, happiness, life satisfaction, and the ability to create positive environments. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 235 Political Psychology 3.0; 3 cr.
This course draws on the social psychological literature of intergroup relations, introducing the students to individual and group-based approaches to the study of intergroup relations, as well as political psychological research in the Arab world. Pre-requisite: PSYC 101/201. Annually.

PSYC 236 Culture and Psychology 3.0; 3 cr.
The course aims to sensitize students to the importance of culture in psychological processes, and focuses on indigenous, cultural, and cross-cultural psychological theories and findings. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 237 Introduction to Cognitive Science 3.0; 3 cr.
An introduction to the interdisciplinary study of cognitive science which involves research about the workings of the mind from the fields of psychology, linguistics, philosophy, education, computer science, neuroscience, anthropology, engineering, and others. The course aims to provide students with an appreciation for the range of disciplinary perspectives and methods, and the applications of cognitive science to everyday life. Annually.

PSYC 238 Applied Behavior Analysis 3.0; 3 cr.
An introduction to Applied Behavior Analysis (ABA) or Behavior Modification, which is concerned with evidence-based applications of behavioral principles to a wide range of socially and clinically important problems. Prerequisite: PSYC 201 or PSYC 101. Occasionally.

PSYC 239 Psychology of Trauma 3.0; 3 cr.
An introductory course aimed to examine the experience and impact of trauma on children and adults. The theories of trauma will be reviewed including the developmental, cognitive, and neuroscience models of trauma and memory. The course will also cover the cultural and socio¬political considerations of trauma as well as evidence-based treatments and post-traumatic growth. Pre- or co-requisite: PSYC 214 or PSYC 215. Occasionally.

PSYC 240 Special Topics in Psychology 3.0; 3 cr.
A course that provides a general overview of an area of psychology that is not normally covered by the department's offerings. Prerequisite: PSYC 201 or PSYC 101. Annually.

PSYC 280 History and Systems of Psychology 3.0; 3 cr.
A course that examines the philosophical foundations of psychology. There is special emphasis on the historical development of scientific conceptions of human behavior and mental processes in the context of contemporary psychological systems. Prerequisite: PSYC 201 or PSYC 101. Every term.

PSYC 282 Research Design in Psychology 3.0; 3 cr.
This course is the first part of the required research sequence for students majoring in psychology. It provides students with a solid foundation in the basic quantitative research methods and design, addresses ethical issues and validity in psychological research, and introduces students to statistical analyses that will be needed for PSYC 284, PSYC 290, and other research-related courses. Prerequisite: PSYC 201 or PSYC 101. For Psychology majors only. Every term.

PSYC 284 Statistical Analyses in Psychology 3.0; 3 cr.
This course is the second part of the required research sequence for students majoring in psychology. It introduces the student to univariate, bivariate and multivariate statistical analyses in psychological research and combines lectures and computer Lab sessions. Prerequisites: STAT 201 or STAT 203 or STAT 210 or STAT 231 and PSYC 282. Every term.

PSYC 288 Undergraduate Seminar in Psychology 3.0; 3 cr.
A review of significant research in major areas in psychology. Prerequisites: PSYC 282 and senior standing. Prerequisite: PSYC 284. Every term.

PSYC 290 Undergraduate Research Project in Psychology 3.0; 3 cr.
This course requires students to plan, conduct, and write up a full empirical study. The course is meant to build upon and further develop the research and data analysis skills acquired in the required research sequence courses. Prerequisites: PSYC 282 and PSYC 284 or consent of department. A minimum grade of B in both PSYC 282 and PSYC 284 is required. Annually.

PSYC 298 Directed Study in Psychology 3–6 cr.
A tutorial course offered to psychology students with an average of A- or above in their major at the beginning of their senior year. This tutorial consists of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis on the work. Students with averages lower than 3.7 may be admitted to directed study at the discretion of the department. Offered on request.

42 Credits in PSYC

Modes of Analysis	**Understanding Communication - English and Arabic(9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (42)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Societies and Individuals outside the major (3)**	**Community-Engaged Learning (3),**

Lecture Courses (9+12 +42+6+ 3+3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required PSYC courses (15): PSYC 101(3) or PSYC 201(3), 280(3), 282(3), 284(3), 288(3) and nine courses from the following three categories (24): Category 1 (3 out of 5 are required (9): PSYC 210(3), 212(3), 214(3), 215(3), 216(3); Category 2 (3 out of 5 are required (9): 220(3), 222(3), 224(3), 226(3), 228(3and PSYC 229 (3); Category 3 (three electives) (6): PSYC 230(3), 232(3), 234(3), 236(3), 240(3), and 290(3), and courses in Category 1 and 2 not already chosen.	Two Understanding the World courses (3) numbered 200 and above. (A BIOL course is recommended.) Required: STAT 201 or STAT 203 or STAT 210 or STAT 231	Required: (3)	Required course (3)

Seminar (3)			Required (3): PSYC 288(3)			
Labor-atory (6)			Required (3): PSYC 282(3), 284(3)			
Rese-arch Project (3)			Required (3): PSYC 212(3), 214(3), 216(3), 226(3), 220(3), 232(3), 240(3), 282(3), 284(3), 290(3)			

Department of Sociology, Anthropology, and Media Studies

Chairperson:	Atwood, Blake
Director of Media Studies:	Burris, Greg
Professors:	Hanafi, Sari; Scheid, Kirsten
Associate Professors:	Atwood, Blake; Burris, Greg; Wick, Livia
Assistant Professors:	Carney, Josh; Farah, May; Kassir, Alexandra; Kosmatopoulos, Nikolas; Majed, Rima; Mourad, Sara; Perdigon, Sylvain; Saleh, Elizabeth; Sukarieh, Rana; Tarraf, Zeina
Lecturers:	Barakat, Rabie; Fathallah, Zeina; Hamdar, Sarah
Instructors:	Azar,George; Ghanem, Samar; Rassi, Rima; Sarouijian, Narod
Part-time Instructors	Agha, Dina; Boustany, Nora

BA in Sociology and Anthropology

Mission Statement

This combined BA degree is designed for students with interests in both sociology and anthropology. It offers a multi-disciplinary curriculum based on the social sciences and the humanities. It prepares students to understand and engage with the social and cultural worlds we inhabit. The joint specialization in Anthropology and Sociology allows students to observe and investigate life in diverse societies while acquiring training in social and cultural theories and methods. It explores what it means to be a person in the Arab region and around the world by examining the ways people organize activities, social structures, institutions and belief systems. Courses will develop students' critical perspective on religion, family, class, medicine, art, displacement, war, social movements, human rights, gender, media, sexuality and colonialism. The BA prepares students to work in areas such as non-governmental and governmental organizations, think tanks, development agencies, research institutes and business and to pursue graduate work or teach in the social sciences and humanities.

Admission

Admission to the sociology-anthropology program requires a minimum grade of C+ in ENGL 203 and ENGL 204, and a grade of C+ or more in one of the following: SOAN 101, SOAN 103, SOAN 201, or SOAN 203. If admission to SOAN is based on SOAN 101 or SOAN 103, any additional SOAN or any social science course is required.

Requirements

The requirements for a BA in Sociology-Anthropology are 90 credits for students entering the department at the sophomore level and 120 for those entering as freshmen, including 39 credits in the major. Required courses include: SOAN 101 or SOAN 103 or SOAN 201 or SOAN 203, and SOAN 210 or SOAN 216, and SOAN 212, SOAN 213, SOAN 237, a SOAN seminar (SOAN 240-290), and 21 additional SOAN credit hours (SOAN 200 and above). The distribution of university requirements is as follows:

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Diploma in Development Studies

The Diploma in Development Studies offers a variety of disciplinary and thematic approaches to development-related issues from a critical perspective rooted in the Global South. The diploma academically prepares students for careers in the development, humanitarian and aid sectors, as well as for careers in research centers or the policy world. It also prepares students for graduate or post-graduate studies in the field of development studies (or other related social science disciplines).

Coursework

The Diploma in Development Studies requires eight courses, including six courses from predetermined subject areas and two elective courses. Please note that the diploma is at the undergraduate level. For graduate level courses to be taken, students must be of senior standing, not on probation, and must secure the consent of the department.

Required Courses

A total of 24 credits (eight courses) are required for the diploma.

1. SOAN 219 Introduction to Development Studies
2. SOAN 210 Research Methods
3. Globalization, Inequality and Development. Pick one of the following (or equivalent as approved by the adviser): SOAN 223 Social Inequality: Conflict and Consensus, ECON 237 Economic Development I, PSPA 238 International Political Economy: From Imperialism to Globalization,

PPIA 306 Political Economy

4. Labor, Migration and Development. Pick one of the following (or equivalent as approved by the adviser): SOAN 290AX Economy and Society, SOAN 323AE Making and Unmaking Markets, ECON 222 Labor Economic
5. Humanitarianism, Forced Migration and Development. Pick one of the following (or equivalent as approved by the adviser): SOAN 242 Seminar in Globalization and Migration, SOAN 245 Seminar in Transitional Justice, SOAN 318 Human Migration
6. Gender and Development. Pick one of the following (or equivalent as approved by the adviser): SOAN 225 Gender and Culture, SOAN 290(TBA): Gender and Development
7. Two electives chosen with the approval of the adviser

Admission Requirements

For Non-AUB: New students should obtain an application from the Office of Admissions and apply as new students. Applications are reviewed by the department and, when accepted, students are classified as special students working for a diploma. Completion of the bachelor's degree is a requirement for admission of new students to the development studies diploma, in addition to proof of efficiency in English. Relevant work experience is favorable.

For AUB students: AUB students working for their bachelor's degree at AUB have to apply to the department directly after completion of their sophomore year with an overall average higher than 3.3.

Course Descriptions

SOAN 101 Freshman Sociology 3.0; 3 cr.
An introduction to the principles and concepts of sociology to prepare students for majoring in sociology. Students who take this course cannot receive credit for SOAN 201. Every term.

SOAN 103 Reading Other Cultures 3.0; 3 cr.
An introduction to the study of other cultures drawing on film, ethnographic case studies, and topical debates. This course presents basic concepts in the comparative study of culture, methods of observing and interpreting other cultures, a sense of how knowledge about other cultures is constructed, and tools to develop a critical awareness of one's own cultural traditions. Note that this course is classified as a humanities, not a social science, course. Students may take it to fulfill the humanities requirement of their freshman year but not in fulfillment of the freshman social sciences requirement. Students may receive credit for both SOAN 103 and SOAN 203. Every term.

SOAN 201 Introduction to Sociology 3.0; 3 cr.
An introduction to the study of social phenomena. Basic concepts, principles, and methods common to the study of society are employed for the analysis of structure and change in society. This course includes the structure and origin of some basic human institutions such as family, kinship, religion, and language. A student who has received credit for SOAN 101 cannot receive credit for SOAN 201. Students may receive credit for both SOAN 201 and SOAN 203. Every term.

SOAN 203 Introduction to Anthropology 3.0; 3 cr.
An introduction to socio-cultural anthropology. Anthropology offers comparative perspectives on the ways people live in the world. In doing so, it challenges some of our commonly

held assumptions about what is natural and universal. The course will explore anthropology's approaches, concepts and methods emphasizing case studies from different settings. Students may receive credit for both SOAN 201 and SOAN 203. Every term.

SOAN 210 Research Methods 3.0; 3 cr.
A survey of the basic techniques and designs of social research, including both quantitative and qualitative methods, the relationship between micro and macro approaches to society, and the interplay between theory and research. Alternate years.

SOAN 211 Analysis of Social Data 3.0; 3 cr.
A survey of basic statistical techniques and other methods of quantitative analysis used in analyzing social data. Students participate in the analysis of research data by applying various analytical techniques using computer packages. They will also interpret research findings and write a research report. Annually.

SOAN 212 History and Theory in Anthropology 3.0; 3 cr.
A survey of some of the major theoretical perspectives and critical issues of classical and contemporary anthropological theory. Special focus is placed on the intellectual history of the discipline, an analysis of the contexts in which it developed and tools to recognize and critically evaluate different perspectives on culture and society. Annually.

SOAN 213 Sociological Theory 3.0; 3 cr.
A survey of some of the major theoretical perspectives and critical issues of classical and contemporary sociological theory. Special focus is placed on four interrelated dimensions: 1) the nature of sociological theory and its intellectual sources, 2) its classic tradition, particularly the legacies of Marx, Durkheim, and Weber, 3) an exploration of salient contemporary perspectives, 4) the emergence of new theories and/or directions, such as post-modernity and global sociology. Alternate years.

SOAN 215 Anthropology of America 3.0; 3 cr.
A critical examination of conceptions of "mainstream" or "dominant" American culture. Using ethnographic case material, the course explores cultural systems and social structures in the contemporary United States, offering an introduction to anthropological approaches to the study of complex societies. Alternate years.

SOAN 216 Hands-On Anthropology 3.0; 3 cr.
An introduction to the techniques, theories, and debates concerning ethnographic fieldwork. What do anthropologists actually do and what is unique about anthropological research? This course explores the politics and ethics of research, kinds of observation, effective interviewing strategies, note-taking, ways of 'coding' or indexing information, data analysis, and approaches to writing. Alternate years.

SOAN 217 Anthropology of the Body 3.0; 3 cr.
An examination of cultural and historical variations in perceptions and experiences of the human body. The course focuses on the ways the human body is culturally constructed and socially experienced, through case studies of labor, sport, health, illness, sexuality, gender, display, and religious ritual. Annually.

SOAN 218 Anthropology of Medicine and Science 3.0; 3 cr.
This course explores science and medicine from a cross-cultural and historical perspective. Students examine how scientific and medical practices are imbued with and shaped by social meanings and politics. They explore how the institutions of science and medicine construct truth, reality, nature, disease, health, body and mind, and how they connect with markets and other institutions. Occasionally.

SOAN 219 Introduction to Development Studies 3cr.
This course aims to introduce students to one of the most widespread but also contested aspects of policy-making today. Development has become a universal catchword - widely used (and abused) by politicians and policy experts to explain (in some version to construct) the economic and cultural gap between “developed” and “underdeveloped” countries. In academic circles, Development Studies emerged as a multidisciplinary field in order to engage with this process, concerning itself with understanding development as a long run historical process of social and/or ecological transformation; as a normative vision, description or measure of the state of being of a desirable society or global order; and as an often critical analysis of efforts at improvement undertaken by a variety of “developmental agencies” ranging from governments through social movements and civil society actors to international organizations. Occasionally.

SOAN 220 City and Society 3.0; 3 cr.
An introduction to some of the leading conceptual and methodological perspectives for the study of transformations in human settlements. The course explores issues associated with the evolution of cities, their spatial and cultural features, and the social production of informal space and the gendering of space. Changing trends and patterns in Third World urbanization are explored with special focus on the Arab World, global, and post-modern cities. Alternate years.

SOAN 221 Political Anthropology 3.0; 3 cr.
This course explores the everyday practices of the larger structures that create and perpetuate power. It emphasizes students’ awareness of the state apparatus, non-state political systems and modes of political exclusion that shape the experience of power locally and trans-nationally. It uses prominent schools of thought, among them Marxism, feminism, Foucauldian and post-colonial theories to provoke critical analyses of power in our own lives. Alternate years.

SOAN 222 Family and Kinship 3.0; 3 cr.
The course examines, from a comparative perspective, different forms of family and kinship organization, their relation to production and systems of exchange. Special focus is placed on processes of initiation and reproduction, and cultural expression of relatedness. Alternate years.

SOAN 223 Social Inequality: Conflict and Consensus 3.0; 3 cr.
The course explores theories of social inequality. It addresses issues such as class, status, and gender inequalities and points to sources of conflict and consensus. Arguments for and against equality are canvassed. Alternate years.

SOAN 224 Sexuality and Society 3.0; 3 cr.
The course provides a comparative conceptual framework to explore the changing nature of sexuality in society. Special focus is placed on the social construction of sexual identities, sex and the body, the place of desire and the changing form of romantic love, erotica and pornography, the commodification of intimacy, sexual ethics and sexual prolifics in a globalized world. The course also focuses on the dynamics of male-female relations in Arab society. Alternate years.

SOAN 225 Gender and Culture 3.0; 3 cr.
An examination of gender holistically and cross-culturally from a social-anthropological perspective. This course examines how meanings of sex variation are constructed and gender is performed by individuals and groups in different societies. It studies the roles of women and men in ritual, in economic and political systems, and in other social arenas. Annually.

SOAN 226 Religion and Society 3.0; 3 cr.
A course that examines the relationship between society and religion, including both formal institutions and informal processes, which deal with the supernatural. This course studies the origin and development of ritual and religious functions for both the individual and society. Alternate years.

SOAN 227 Cultural Boundaries and Identities 3.0; 3 cr.
Cultural Boundaries and Identities.

SOAN 228/MCOM 203 Arab Media and Society 3.0; 3 cr.
An in-depth examination of the political, social, economic, and technological effects of old and new Arab media systems on modern Arab society, with an emphasis on Lebanon and the Arab East region. It focuses on probing the development and current state of print, broadcast and new media systems in the region. Annually.

SOAN 229/MCOM 202 Communication Theory 3.0, 3 cr.
An overview of the ways in which mass communication has been viewed by social scientists and by practitioners, with a focus on the range of issues studied and questions raised, and the schools, approaches, and trends in the field. Annually.

SOAN 230 Political Sociology 3.0, 3 cr.
This course will provide an overview of the main theories and approaches in political sociology, and it will cover some of the key concepts in the field. It will start with a general introduction to political sociology and its relevance. This will be followed by a survey of the main classical schools of thought including pluralism, elite theories, Marxism, and corporatism. The course will then explore more contemporary theories in political sociology including authors such as Foucault, Gramsci, Arendt, Baumann or Skocpol. Following this general introduction, the course will then tackle major concepts and attempt to examine them through relevant case studies. These concepts will include: civil society, political organization, capitalism and neoliberalism, globalization, nation and nationalism, gender and sexuality, race, ethnicity and sectarianism, identity politics, contentious politics, social movements, revolution and violence. Occasionally

SOAN 232 Conflict Analysis and Resolution 3.0; 3 cr.
An overview of the field of conflict analysis and resolution. This course covers the history of conflict studies, theories of conflict, and methods of dispute resolution. Annually.

SOAN 236 Semiotic Anthropology: An Introduction to Signs in Society 3.0; 3 cr.
An introduction to semiotic anthropology as a method for analyzing how language and other sign systems contribute to shape everyday interactions, social institutions and the various ways in which humans inhabit the world. Students will approach works by major authors who sought to theorize the structure of signs and sign systems, and learn to recognize the various modes of anthropological interpretation that these works inspired. Case studies will demonstrate how the toolbox of semiotic anthropology can be brought to bear on a range of topics, including gender and sexuality, the social formation of subjectivity, the emergence of political collectives, religion and modernity, and human-nonhuman interactions. Alternate years.

SOAN 237 Arab Culture and Society 3.0; 3 cr.
A study of contemporary Arab society: its complexity, diversity, and internal dynamics. This course considers social structures, social groups, cultural patterns, and processes and agents of social and cultural change, and examines current debates on major issues in Arab culture and society. Listed as SOAN 214 prior to Fall term 2012-13. Prerequisite: Junior or senior status or consent of the instructor. Every term.

SOAN 238 Special Topics (Humanities) 3.0; 3 cr.
A course that provides a general overview of an area in the humanistic social sciences that is not normally covered by the department's offerings. Note that this course is classified as a Cultures and Histories, not as a Societies and Individuals, course.

SOAN 239 Special Topics (Social Sciences) 3.0; 3 cr.
A course that provides a general overview of an area in anthropology or sociology that is not normally covered by the department's offerings. Occasionally.

SOAN 240 Seminar in Human Rights and Cultural Differences 3.0; 3 cr.
A seminar that provides students with an introduction to the history, concepts, institutions, and applications of human rights. Although drawn mainly from a Western perspective, applications are canvassed from the Middle East as well. Discussions cover philosophical foundations of human rights law; discrimination, xenophobia, and racism; civil, political, social, and economic rights; women's rights; children's rights; rights of minorities and indigenous people; and migrant workers' rights. Alternate years.

SOAN 242 Seminar in Globalization and Migration 3.0; 3 cr.
An introduction to a range of issues related to theories of migration with particular emphasis on the peculiarities of contemporary globalization. Theoretical considerations include assumptions and case studies from sociology, economics, political economy, and anthropology. Concepts such as network theory, transnationalism, and the international division of labor are used to illuminate issues such as citizenship and identity, refugees, forced migration, nationalism, and ethnicity as they relate to the migratory experience. Alternate years.

SOAN 243/MCOM 260 Seminar in Media Studies 3.0; 3 cr.
An undergraduate seminar on the role of communication in society. The content areas may change. May be repeated for credit. Annually.
SOAN 245 Seminar in Transitional Justice 3.0; 3 cr.
The seminar is an exploration of the strategies and courses of action societies confront as they consider legacies of past human rights abuses or atrocities. It examines the ways in which states and the international community attempt to achieve justice in periods of political

transition. Some of the leading theories and applied dimensions will be critically assessed in the light of the operation of international and domestic criminal justice, historical and administrative justice. Annually.

SOAN 250 Seminar in Art and Culture 3.0; 3 cr.
A cross-cultural exploration of art as an idea, an object, a history, and a way of interacting with the world. How is art a universal category? This course applies anthropological theories to the study of art and art theories to the study of human society. Particular attention is paid to local resources and archives. Occasionally.

SOAN 251 Seminar in Anthropological Thought 3.0; 3 cr.
An investigation of the major theories guiding anthropological thinking today, through a historically contextualizing overview. This course introduces students to a range of theoretical propositions concerning such topics as agency, structure, subjectivity, power, and the politics of representation by reading primary texts from landmark figures in sociocultural anthropology. Occasionally.

SOAN 252 Seminar in Controversies: Ethics and Epistemology 3.0; 3 cr.
An investigation of the cases that have shaken the discipline of anthropology and/or sociology. This course uses some issues including cannibalism and espionage to enter into some of the core concerns in the study of humans. What have been the ethical controversies moving our discipline? What are the epistemological questions raised by the controversies? Occasionally.

SOAN 253 Political Sociology in the Arab World 3.0; 3 cr.
This course tackles the question of power and society in the contemporary Arab world. It attempts to understand the political sociology of these societies through a focus on critical thinking and case studies. The course starts with a general introduction to the field of political sociology and its application in the Arab region. It then moves to exploring the concept of "orientalism" and its critique. This is followed by a discussion on researching Arab societies and some of the major problems faced or created by researchers. The rest of the course tackles some of the most pertinent debates in the Arab world today including: the role of civil society, the importance of organization, social classes and inequality, gender and politics, nationalism, sectarianism, political Islam, the Arab uprisings, the role of youth, and war and violence. Occasionally.

SOAN 290 Special Topics Seminar 3.0; 3 cr.
SOAN faculty or visiting professors and recognized scholars might be invited to offer seminars to explore relevant dimensions of their research in progress. Occasionally.

SOAN 299 Directed Study 3–6 cr.
A tutorial course offered to SOAN students with an average of 3.7 or above in their major at the beginning of their senior year. This tutorial consists of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis on the work. Students with averages lower than 3.7 may be admitted to directed study at the discretion of the department. Occasionally.

39 Credits in SOAN

Modes of Analysis	**Understanding Communication - English and Arabic(9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (Min. 39+6)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Societies and Individuals outside the major (3)**	**Community-Engaged Learning (3),**
Lecture Courses (9+12 +39+6+ 3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required 15 SOAN 101(3), 103(3), 201(3), 203(3),210(3), 216(3), 212(3), 213(3), 237(3) Electives (21) from SOAN 200-299	Required 6 Understanding the world courses. Required 3 credits SOAN 211	Required 3 credits	Required course (3)
Seminar (3)			Required (3) from SOAN 240(3)-SOAN 290			

BA in Media and Communication

Mission Statement

The BA in Media and Communication offers students an interdisciplinary curriculum based in both the liberal arts and social sciences, and prepares students to engage with the complexity of contemporary media. The program offers a regional and global perspective, focusing on the role of media in Arab society. Students learn systematic and critical modes of inquiry into the nature, processes and consequences of media in both historical and emerging contexts. Students also develop relevant practical skills, coupled with critical, ethical and political perspectives on contemporary social and cultural landscapes.

Admission

Students wishing to major in Media and Communication are accepted provisionally until they have achieved an average of 3.0 or more in MCOM 201 and MCOM 202 (within their first three semesters), and an average of 3.0 or more in ENGL 203 and ENGL 204. Students admitted as media and communication majors must maintain an average of 2.3 or more in their first three terms in major courses in order to remain in the program.

Transfer to Media and Communication from other departments within FAS is competitive and requires approval of the Media Studies Program. Students will be considered for transfer to Media and Communication if they obtain a minimum cumulative average of 3.0 in MCOM 201 and one List A Elective (of the student's choice), a minimum cumulative average of 2.3 in all MCOM courses taken, a minimum grade of B in ENGL 203, and a minimum cumulative average of 3.0 in ENGL 203 and ENGL 204 (if ENGL 204 is taken).

Requirements

The requirements for a BA degree in Media and Communication are 90 credits for students entering the department at the sophomore level, including 43 credits in the major, and at least 36 credits of General Education courses, as required by the university.

Requirements for the BA program are MCOM 201, MCOM 202, MCOM 203, MCOM 204, MCOM 260, and MCOM 296, 15 credits of any List A elective (MCOM205, 206, 215-239, 261-292, 294 (0 credit), 299), and 9 credits of any List B elective (MCOM 240-259, MCOM 293, or ARAB 223).

In addition, students must take CMPS 207, SOAN 237 and either MCOM 210, PSPA 203, STAT 203, or any research methods class approved by the advisor. MCOM students cannot receive credits for more than one of the following courses: MCOM 210, PSPA 203, STAT 203.

University General Education Requirements

The General Education requirements are Understanding Communication - English (6 credits), Understanding Communication - Arabic (3 credits), Cultures and Histories (9 credits), Human Values (3 credits), Societies and Individuals (6 credits), Understanding the World and Quantitative Reasoning (9 credits with at least 3 credits from each), and Community Engaged Learning (3 credits).

At least one of the courses from Cultures and Histories or Human Values should be from the History of Ideas: CHLA. At least one course from your degree requirements (except Understanding Communication) should cover the theme of Social Inequalities (3 credits).

Course Descriptions

MCOM 201 Introduction to Media Studies 3.0; 3 cr.
An introduction to the field of media studies, its concepts and theories, and the various modern media industries and professions in today's world. The course aims to help students become better informed about career options in this field and more discerning media consumers. Pre or corequisite: ENGL 203. Annually.

MCOM 202 Communication Theory 3.0; 3 cr.
An overview of the ways in which mass communication has been viewed by social scientists and by practitioners, with a focus on the range of issues studied and questions raised, and the schools, approaches, and trends in the field. Pre or corequisite: ENGL 203. Annually.

MCOM 203 Arab Media and Society 3.0; 3 cr.
An in-depth examination of the political, social, economic, and technological effects of old and new Arab media systems on modern Arab society, with an emphasis on Lebanon and the Arab East region. It focuses on probing the development and current state of print, broadcast and new media systems in the region. Pre or corequisite: ENGL 203. Annually.

MCOM 204 From Telegraph to Twitter(X): Media History 3.0; 3 cr.
This course situates the history of communication – from the telegraph to today's social media – as more than a history of technology, and discusses the complexity with which the social world is constructed. Both technology and history enter into conversation, opening up points of critical engagement of modern understandings of the world. Pre or corequisite: ENGL 203. Annually.

MCOM 205 Interpersonal Communication & Folk Media 3.0; 3 cr.
This course examines the interpersonal communication process with a focus on the folk (oral) media as traditional face to face communication media. The course involves an interdisciplinary investigation of relationships between Arab daily life and folk media, roles of formulating folk culture in theatre and films, and popular music and its audience. Pre or corequisite: ENGL 203. Occasionally.

MCOM 206 Introduction to Cinema 3.0; 3cr.
This course is designed to introduce students to the study of cinema. Three major areas of study will be emphasized: cinema history, film analysis, and global industries. Students are required to attend two lectures a week as well as weekly film screenings. Pre or corequisite: ENGL203. Annually.

MCOM 210 Research Methods in Media Studies 3.0; 3 cr.
An introduction to the design and implementation of research methodology in media studies. It covers formulating research problems, reviewing scientific literature, designing instruments, and utilizing data collection and analysis techniques, both quantitative and qualitative. Students participate in actual research projects and apply various techniques of data collection and analysis to interpret research findings. Pre or corequisite: ENGL 203. Occasionally.

MCOM 215 Media Law and Ethics 3.0; 3 cr.
A survey of Lebanese, Arab and International media laws and regulations, and their application within the realms of journalism, public relations, advertising, digital media, and entertainment, with an exploration of ethical guidelines, moral values, and social responsibilities of media scholars, practitioners and educators. Pre or corequisite: ENGL 203. Occasionally.

MCOM 216 Public Opinion 3.0; 3 cr.
A general study of the nature of public opinion, and the interplay between psychological and socio-cultural processes in the formation and dissemination of public opinion. An attempt is also made to explore the impact of public opinion on media and socio-cultural change. Measurements of public opinion are also explored. Pre or corequisite: ENGL 203. Occasionally.

MCOM 217 Political Communication Campaigns 3.0; 3 cr.
This course introduces students to the subfield of political communication, covering its main theories, research methods, and modern applications and strategies. Students gain theoretical and working knowledge of political campaign operations, political press offices, the roles of a political press secretary, media advisor, and communication director, and the technologies used in modern political campaigns. Pre or corequisite: ENGL 203. Occasionally.

MCOM 218 Media Activism for Social Change 3.0; 3 cr.
An introduction to the theories and strategies of media use for non-violent activism and advocacy campaigns and social movements, with a focus on principles of civic activism in the era of digital media convergence. The course balances theory and skills by examining case studies of media activism from around the world and using digital media tools with a stress on digital tools and civic activism principles to develop social and political change campaigns for civil society groups. Pre or corequisite: ENGL 203. Occasionally.

MCOM 219 (A....Z) Media Depictions of Society 3.0; 3 cr.
This course examines the role of the media in constructing our social reality through an examination of media practices, both historically and in the present. Different themes and foci will be explored, with an eye to covering the politics of culture and identity as they shape and intersect with today's globalized media. Pre/co-requisite: ENGL 203. May be repeated for credit. Occasionally.

MCOM 220 Popular Culture 3.0; 3 cr.
From the mid-20th century until the present moment, popular cultural productions and consumer products have become ubiquitous worldwide. While globalized chains of production and distribution account for the availability of these cultural products, we ask what is the significance of their popularity? What are the histories of these commodities, and what tensions do they reconcile or expose in the cultures from which they emerge? And, indeed, what precisely is popular culture, anyways? Pre or corequisite: ENGL 203. Occasionally.

MCOM 221 War and Media 3.0; 3 cr.
This seminar asks 'what is a visual culture of war?" as it expands across an array of media platforms, technologies, and aesthetic conventions. Through a careful examination of key readings and visual representations, we will work to build a more precise theoretical and analytical language for understanding war not simply as an "event" or set material effects on the battlefield and home front, but as a discursive production mediated through a number of often intersecting media sites and institutions. Pre or corequisite: ENGL 203. Occasionally.

MCOM 222 Introduction to Visual Culture 3.0; 3 cr.
This course examines the role images play in society. Students will explore key historical and contemporary issues, and critical perspectives on the relations of power and desire that structure practices of looking. Students will become familiar with methods of comparing different media forms, social arenas, and cultural contexts. Students will also pursue a research-intensive final project that welcomes image-making as part of the research/writing process. Pre/co-requisite: ENGL 203. Annually.

MCOM 223 On Television 3.0; 3 cr.
Students are exposed to the study of television as a distinctive approach to the study of the media landscape. The class will explore television's political and economic structures, cultural form, and social function in a range of national, regional, and global contexts. Pre/co-requisite: ENGL 203. Occasionally.

MCOM 224 (A....Z) World Cinemas 3.0; 3 cr.
In this undergraduate seminar, students will examine film cultures in various national and transnational settings. Through close readings of current scholarly literature, weekly film screenings, and seminar discussions, students will interrogate the relationship between culture and politics and explore such contested topics as identity, memory and trauma, power and resistance, and spectacle and surveillance. Pre/co-requisite: ENGL 203. May be repeated for credit. Occasionally.

MCOM 225 Photojournalism Then and Now 3.0; 3 cr.
This course covers the history of Photojournalism and its place within the wider field of photography and society at large. Students will learn of the related fields of Documentary Photography and Street Photography, and will explore early and modern masters, the social and political impact of their work and varied methodologies. Pre or corequisite: ENGL 203 Occasionally.

MCOM 226 Journalism and Society 3.0, 3 cr.
This course examines the various forms and phases of transition that have framed the evolution of journalism and the relationship between these transitions and social, political, economic and technological factors, with a focus on the current digital age. The course traces the trajectory of the industry's transformations in addition to the challenges and debates - both academic and societal - that have emerged in parallel to this trajectory. This comprises introductory issues relevant to the basic definition of journalism as well as more contemporary topics pertaining to the challenges of market-oriented digital production, media activism and political restraint, media trends and identity formation, the birth and evolution of new media platforms and applications, and the proliferation of digital entrepreneurship. Pre or corequisite: ENGL 203. Annually.

MCOM 227 Media and the Environment 3.0; 3cr
This course examines media's role in shaping the built and natural environments around us. It draws on developments in environmental communication and critical media infrastructure studies to consider media both as modes of communication and as technologies with material forms. The course explores the genres and communication strategies used by activists, artists, and media producers to articulate the environment and its problems. Prerequisite: Pre/co-requisite: ENGL 203. Occasionally.

MCOM 228 Introduction to Digital Media 3.0; 3cr.
In this course, students will learn how to navigate an ever-changing media reality beginning with digital media's origins and exploring its various life-moment. Pre or corequisite: ENGL203. Annually.

MCOM 229 Sex, Gender & Media in the Middle East 3.0; 3 cr.
In examining how discourses of gender and sexuality have shaped the ways in which the "Middle East" has come to be imagined, this seminar will cover key debates that have, in turn, shaped academic knowledge production on gender in the region, The course also examines media's central role in the production and circulation of discourses and counter-discourses on the status of women and sexual minorities, as well as men and masculinities, in the Middle East. Pre/co-requisite: ENG 203. Occasionally.

MCOM 234 Labor, Media, and Gender 3.0; 3 cr.
Examining theories of labor, creative economy, and media industries, this course explores the various entanglements between labor, media, and gender. It examines why certain kinds of creative labor—from filmmakers to social media influencer—have become gendered and to what end. The course also studies how media industries have understood and represented gendered labor. Rather than view media work as a static entity, it determines how industrial shifts, technological developments, and economic reforms have shaped creative labor. Pre/co-requisite: ENG 203. Occasionally.

MCOM 240 News Reporting and Writing 3.0; 3 cr.
An introduction to the reporting and writing of various news stories based on reliable information gathered through interviewing, research, and observation. Formats include basic newspaper and magazine articles, online news, press releases, and other journalistic formats, with emphasis on accuracy, concise presentation, meeting deadlines, and objective and ethical reporting. The course covers news styles, an expanded news vocabulary, sentence structure, story organization and clean writing. Prerequisite: ENGL 203. Every term.

MCOM 244(A....Z) Specialized News Reporting and Writing 3.0; 3 cr.
The course explores specialized reporting and writing techniques, including feature stories, opinion columns, profiles, in-depth series, and narrative journalism. It aims to enable students to report and write effectively across news genres and to master transferable communication skills useful beyond the journalism profession. Each term the course covers some specialized and emerging journalism themes, including investigative reporting, data journalism, covering conflict, and violence, technology journalism, non-fiction narrative, and others. May be repeated for credit. Pre or corequisite: ENGL 203. Occasionally.

MCOM 245 Broadcast Media 2.2; 3 cr.
This course provides students with both concepts and practical skills related to broadcast media with a focus on news reporting and documentary film production. It requires students to critically reflect on how broadcast news and documentary reporting shapes our world view and political beliefs and actions. The course covers fundamental skills of television news and documentary film production: shooting, interviewing, writing, editing and producing news stories and documentary films, with the aim of providing students the opportunity to learn the basic journalistic and technological skills of visual media production. Pre or corequisite: ENGL 203. Occasionally.

MCOM 246 Multimedia Production 3.0; 3 cr.
An introduction to digital and multimedia production, covering basic digital and Web design principles, photojournalism, audio reporting, video journalism, news blogging, social media reporting, CMS managing, multiplatform publishing, and writing for a converged news environment. It also covers emerging new media issues, such as interactivity, information architecture, and individualization. Pre or corequisite: ENGL 203. Occasionally.

MCOM 247 Trauma Journalism 3.0; 3 cr.
This course aims to sensitize and train students on how to deal with victims of trauma, conflict and violence, including war, suicide, homicide, rape, domestic violence and other traumatizing experiences. It teaches students how to ethically and fairly cover trauma victims, how to protect themselves physically and psychologically from the negative effects of trauma reporting, and how to professionally and sensibly tell the trauma story to their audiences. Pre or corequisite: ENGL 203. Occasionally.

MCOM 250 Video Editing 3.0; 3 cr.
This course is an introduction to the field of digital and video editing, including the history and overview of analog and digital video. The course explores a variety of digital video career options, industry trends and the practical application of non-linear video editing. Students will learn how to manage data efficiently, how to manage a variety of data formats and will work hands-on with Final Cut Pro 10 or Premiere Pro CC on a variety of editing projects, from simple sequences to branded content, music videos and parallel editing of fiction scenes. Pre or corequisite: ENGL 203. Occasionally.

MCOM 251 Photojournalism 3.0; 3 cr.
This course is for students who have mastered basic photography skills and are familiar with the history of photojournalism. Students will learn about the ethics of photojournalism and explore critical issues in the field today. In addition to photojournalism, the class will cover the basics of documentary video shooting and the related fields of documentary photography and street photography. Pre/co-requisite: ENGL 203. Occasionally.

MCOM 252 Digital Media Practices 3.0; 3cr.
This course is about the study and production of digital media on video and audio streaming platforms. The course will focus on increasingly popular media phenomena that are being produced independently and around the globe. Students will study, analyze, critique and produce one of these new media forms. Pre or corequisite: ENGL203. Occasionally.

MCOM 253 Social Media Strategies 3.0; 3cr.
This course aims to expand familiarity of theories and methods that explore the interrelationship between social media and society, how each is shaped by and in turn shapes the other. Students will critically explore the role of social media in contemporary society, and then engage with planning and implementing social media campaigns including content creation, seeding and promotion. Pre/co-requisite: ENG 203. Occasionally.

MCOM 260 Senior Seminar in Media Studies 3.0; 3 cr.
A senior undergraduate seminar on the role of media in society. The content areas may change. Prerequisite: Senior standing. Every term.

MCOM 290 Special Topics Seminar 3.0; 3 cr.
MCOM faculty or visiting professors and recognized scholars might be invited to offer seminars to explore relevant dimensions of their research in progress. May be repeated for credit. Pre or corequisite: ENGL 203. Occasionally.

MCOM 291 Special Topics (Humanities) 3.0; 3 cr.
A humanities course that provides a general overview of an area in media studies that is not normally covered by the department's offerings. May be repeated for credit. Pre or corequisite: ENGL 203. Occasionally.

MCOM 292 Special Topics (Social Sciences) 3.0; 3 cr.
A social sciences course that provides a general overview of an area in media studies that is not normally covered by the department's offerings. May be repeated for credit. Pre or corequisite: ENGL 203. Occasionally.

MCOM 293 Special Topics (Practice-based elective - List B) 3.0, 3 cr.
A practice-based course that addresses an area in media studies that is not normally covered by the department's offerings. May be repeated for credit. Pre or corequisite: ENGL 203. Occasionally.

MCOM 294 Media Brown Bag 0 cr.
The Media Brown Bag course consists of a series of seminars presented by leading media researchers and practitioners from local and international media initiatives, broadcasters, print media, and advertising agencies. The aim of the seminar is to allow students first-hand accounts of working in the media industry, to engage in discussion with prominent media practitioners, and to allow students to discover potential career paths in media. Pre or corequisite: ENGL 203. Every term.

MCOM 296 Internship 3.0; 3 cr.
A summer period of guided work experience supervised by the MCOM Internships and Workshops Coordinator and designed to acquaint students with a specific media/communication profession and help them acquire core values and basic skills necessary for finding future work and succeeding in that profession. Prerequisite: Consent of instructor. Every term.

MCOM 299 Directed Study 3–6 cr.
A tutorial course offered to MCOM students with an average of A- or above in their major at the beginning of their senior year. This tutorial consists of independent research, original creative compositions, or directed reading, and includes the presentation of a report, project, or thesis on the work. Students with averages lower than A- may be admitted to directed study at the discretion of the department. Pre or corequisite: ENGL 203. Occasionally.

45 Credits in MCOM

Modes of Analysis	**Understanding Communication - English and Arabic(9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (Min. 39+6)**	**Understanding the World, Quantitative Reasoning (9:3/6+3/6)**	**Societies and Individuals outside the major (3)**	**Community-Engaged Learning (3),**
Lecture Courses (9+12 +46+ 3+3)	Required Arabic course (3) Required English courses: ENGL 203(3), 204(3)	Required credits in the Cultures and Histories: 9 credits including History of Ideas and 3 credits Human Values	Required (16): MCOM 201(3), 202(3), 203(3), 204(3), 260(3), 296(3) MCOM 210 (or PSPA 203 or STAT 203 (3) Electives (15) From MCOM 205, 215-239, 261-294, 299; (9) electives from MCOM 240-259, MCOM 293, or MCOM 295 (A...Z) 1 credit or ARAB 223) (3) SOAN 237	Required 6 Understanding the world courses. Required 3 credits CMPS 207	Required 3 credits	Required course (3)

Minors in Sociology, Anthropology, and Media Studies

Anthropology: One core course (SOAN 203 or SOAN 212) and 4 electives from the following: SOAN 203, SOAN 212, SOAN 215-218, SOAN 220–227, SOAN 236, SOAN 237, SOAN 250-252, and SOAN 290 (if selected topic is in Anthropology).

Media and Communication: Two requirements from the following: MCOM 201, MCOM 202, MCOM 203 or MCOM 204. Two List A electives from: MCOM 205, MCOM 206, MCOM 215 to MCOM 239, MCOM 290 - MCOM 292. One List B elective from MCOM 240 to MCOM 259, MCOM 293.

Film and Visual Culture: Two of the following core courses (ENGL 219, MCOM 206, MCOM 222), two electives from the following: ENGL 241A, ENGL257 (A....Z), MCOM219, MCOM220, MCOM221, MCOM 223, MCOM 225, MCOM 230, SOAN236, SOAN250, or other classes/special topics courses approved by the coordinator of the minor program, and one elective from the following: ENGL 239, ENGL 254A, MCOM 245, MCOM 246 or special topics courses approved by the coordinator of the minor program.

Reporting in the Digital Age: Three core courses (MCOM 226, MCOM 240 and MCOM 246), and two additional electives from the following: MCOM 215, MCOM 225, MCOM 241, MCOM 244 (a to z), MCOM 245, MCOM 247, MCOM 250, MCOM 251 and any new or related special topics courses as approved by the program.

Sociology: SOAN 201, SOAN 213, SOAN 237, plus two electives from the following: SOAN 210, SOAN 220, SOAN 222, SOAN 223, SOAN 224, SOAN 225, SOAN 232, SOAN 240–242, SOAN 245 and SOAN 290 (if selected topic in Sociology). If a student has taken SOAN 101 and, therefore, cannot take SOAN 201, they should take SOAN 213, SOAN 237, and three of the electives listed above.

Human Rights and Transitional Justice: The requirements are: SOAN 245, SOAN 240 or PSPA 235, and three electives from the following: SOAN 221, MCOM 250, MCOM 251, SOAN 232, PSYC 211, PHIL 216, PHIL 252, PSPA 222, PSPA 232, or any special topics course in SOAN, PSYC, PHIL, PSPA, which will fit with the minor topic, upon the approval of the respective department chair and the coordinator of the minor program. Students majoring in sociology-anthropology should take at least three courses other than SOAN courses.

The Anis Makdisi Program in Literature (AMPL)

Director:	Jarrar, Maher
Advisory Committee:	AbdelMegeed, Maha; Harb, Sirene; Jarrar, Maher; Makdisi, Saree (UCLA)

The Anis Makdisi Program in Literature (AMPL) was inaugurated in October 2002.

Objectives

The AMPL promotes and supports interdisciplinary dialogue and different approaches in the study of literature following the tradition initiated by Anis K. Makdisi. The aim of this program is to encourage and develop scholarly interest in the humanities in general and in literature in particular, and to foster intellectual exchange among members of different departments, students, and visiting scholars.

Activities

Program activities include:

- an annual Anis K. Makdisi memorial lecture by a leading scholar in literature or a noted author of poetry or prose. All lectures are published by the program.
- a series of seminars on various issues and topics in literature and cultural studies offered by local, regional, and international scholars, novelists, and artists. The primary aim of the seminars is to enrich the study and the teaching of literature at AUB by providing wide discussion forums.
- informal gatherings (lectures, discussions, colloquia) as a venue for scholarly debate for the academic community in Beirut.

Scholarships

The Program offers two scholarships every year:

- The Anis K. Makdisi Graduate Fellowship to support graduate studies in literature at AUB
- The Anis K. Makdisi Scholarship in Literature for undergraduate studies
  Website: https://www.aub.edu.lb/fas/ampl/Pages/index.aspx

Center for Arab and Middle Eastern Studies (CAMES)

Director:	Hanafi, Sari
Assistant Director:	Saidi, Aliya R.
Lecturer:	Sultani Kanawati, Rima
Instructor:	Semaan, Rima
Middle Eastern Studies Steering Committee:	Atwood, Blake Robert; Hanafi, Sari; Mejcher- Atassi, Sonja; Orfali, Bilal; Saidi, Aliya; Tell, Tariq
Islamic Studies Steering Committee:	Hanafi, Sari; Haydar, Bashshar; Ismail, Ghena; Khodr, Hiba; Orfali, Bilal; Saidi, Aliya

The Center for Arab and Middle Eastern Studies (CAMES) is an interdepartmental, interdisciplinary unit that seeks to enhance the understanding of the Middle East and Islamic civilization and to encourage informed scholarship in all related academic disciplines. CAMES is committed to the study of the Arabic language and offers courses at all levels in coordination with the Department of Arabic and Near Eastern Languages, as well as seven-week intensive language courses in Modern Standard Arabic and Lebanese Colloquial Arabic in the summer.

CAMES offers MA programs in Middle Eastern and Islamic Studies (see Graduate Catalogue) and a select number of courses at the undergraduate level. To complement students' course work and to promote scholarship about the Middle East and Islamic civilization at AUB, the center also sponsors visiting lectures and conferences and holds occasional events, such as film showings and readings.

MEST 201 Introduction to the Middle East 3.0; 3 cr.
This course provides an introductory survey of the history, politics, political economy, international relations, and cultures of the contemporary Middle East.

MEST 210 Special Topics in Middle Eastern Studies 3.0; 3 cr.
Special Topics in Middle Eastern Studies.

MEST 240 Introduction to Lebanese Arabic 5.0; 3 cr.
This course is only for foreign speakers of Arabic. The course builds proficiency in Lebanese Arabic through the introduction of the grammatical features of the Lebanese dialect and the practice of interactive functional skills, including listening comprehension, conversation tasks, and vocabulary building. For undergraduate and graduate students. Consent of instructor required. Every term.

MEST 241 Intermediate Lebanese Arabic 5.0; 3 cr.
This course is only for foreign speakers of Arabic. Intermediate Lebanese Arabic is a continuation of MEST 240 Introduction to Lebanese Arabic. The course emphasizes the further development of conversational skills in Lebanese Arabic, and therefore targets primarily speaking and listening skills. Knowledge of the Arabic alphabet is required to join MEST 241. This course concentrates on increasing vocabulary and command of syntax enabling students to reach a higher level of fluency. For undergraduate and graduate students. Consent of instructor required. Prerequisite: MEST 240 or placement based on a placement interview. Every term.

MEST 242 Advanced Lebanese Arabic 3.0; 3 cr.
This course is the continuation of the sequence begun in MEST 241 (Intermediate Lebanese Arabic) and MEST 240 (Introduction to Lebanese Arabic). Like the preceding courses, it focuses on spoken rather than written Arabic and will therefore target primarily the oral/aural skills: speaking and listening. Knowledge of the Arabic alphabet is required to join MEST 242. The course is designed to meet the needs and expectations of non-native young adults and adults who are seeking to develop a comfortable level of proficiency in a variety of complicated communicative tasks and social situations. For undergraduate and graduate students. Consent of instructor required. Prerequisite: MEST 241 or placement based on a placement interview. Every term.

Intensive Summer Arabic Programs

Modern Standard Arabic

MEST 360 Elementary Arabic (Intensive) 9 cr.
This course is designed to introduce students who have no previous knowledge of Arabic to the Arabic language and culture within its Lebanese setting. The course utilizes an integrated approach that teaches both Standard and Lebanese Arabic based on communicative tasks and contexts. By the end of the course, students will be able to speak and write simple connected sentences about themselves, their families and their immediate environment. They will also be able to read and listen to short authentic texts (announcements, advertisements, short weather reports, menus, daily schedules, etc.). During the course, students will become familiar with Arab culture in general and various aspects of Lebanese culture and society. The course will use Alif Baa: Introduction to Arabic Letters and Sounds (3rd Edition) as well as part of Al-Kitaab fii Ta'allum al-'Arabiyya: Part One (3rd Edition). At the end of this course, students are expected to reach Intermediate-Low to Intermediate-Mid proficiency in Arabic on the ACTFL scale. Annually.

MEST 361 High Elementary Arabic (Intensive) 9 cr.
This course is designed for students who have had the equivalent of one semester of Arabic instruction. It is also appropriate for students who have already had some limited exposure to the Arabic language, for instance, those who have lived in an Arab country or an Arabic-speaking environment, as well as those who have received some tutoring in Arabic. Students who enroll at this level are expected to know the Arabic alphabet and have limited reading, writing and conversational skills. The course utilizes an integrated approach that teaches both Standard and Lebanese Arabic based on communicative tasks and contexts and will use Al-Kitaab fii Ta'allum al-'Arabiyya: Part One (3rd Edition). By the end of the course, students are expected to reach Intermediate-Mid proficiency in Arabic following the ACTFL scale. Annually.

MEST 362 Intermediate Arabic (Intensive) 9 cr.
This course is designed for students who have completed at least two semesters of Arabic in an academic setting but whose placement results require that they go at a slower pace than the intermediate class. The course is also appropriate for students who have been away from the language for some time. The objectives of this course, in general, are to further develop the students' skills and strategies, expand active vocabulary in a wide variety of topics and settings, enhance knowledge of basic Arabic grammar, and further develop intercultural competence. The course utilizes an integrated approach that teaches both Standard and Lebanese Arabic based on communicative tasks and contexts and will use Al-Kitaab fii Ta'allum al-'Arabiyya: Part One (3rd Edition) and a part of Al-Kitaab fii Ta'allum al-'Arabiyya: Part Two (3rd Edition). By the end of the course, students are expected to reach Intermediate-Mid to Intermediate-High proficiency in Arabic following the ACTFL scale. Annually.

MEST 363 Intermediate Mid Arabic (Intensive) 9 cr.
This course is designed for students who have had the equivalent of two to three semesters of Arabic instruction. The course aims to further enhance students' proficiency in the various skills, expand their cultural knowledge, expand their vocabulary, and enhance their control of grammatical structures and pronunciation. All communications between instructors and students are carried out strictly in Arabic. Part of the students' activities at this level involves giving oral presentations and doing a lengthy writing project. The course utilizes an integrated approach that teaches both Standard and Lebanese Arabic based on communicative tasks and contexts and will use Al-Kitaab fii Ta'allum al-'Arabiyya: Part Two (3rd Edition) and parts of Al-Kitaab fii Ta'allum al-'Arabiyya: Part Two (2nd Edition). By the end of the course, students are expected to reach Intermediate-High proficiency in Arabic following the ACTFL scale. Annually.

MEST 364 Intermediate High Arabic (Intensive) 9 cr.
This course is designed for students who have already had the equivalent of four to five semesters of Arabic instruction. The objective of the course is to further enhance students' proficiency in the various skills, expand their cultural knowledge, expand their vocabulary, and enhance their control of complex grammatical structures and pronunciation. The course utilizes an integrated approach that teaches both Standard and Lebanese Arabic based on communicative tasks and contexts. By the end of the class, students are expected to comprehend lengthy authentic listening material and to give long oral presentations with facility. They are also expected to be able to write extensive compositions and to read authentic Arabic texts for research purposes. The course will use part of Al-Kitaab fii Ta'allum al-'Arabiyya: Part Two (2nd Edition) and part of Al-Kitaab fii Ta'allum al-'Arabiyya: Part Three. By the end of the course, students are expected to reach Advanced-Low to Advanced-Mid proficiency in Arabic following the ACTFL scale. Annually.

MEST 365 Advanced Arabic (Intensive) 9 cr.
This course is designed for students who have already had the equivalent of six semesters of Arabic instruction. It aims to enable students to reach higher levels of advanced proficiency in all skills. Students are required to do extensive readings on a variety of topics and genres, such as literature, language and the social sciences. They are also expected to engage in debates, give oral presentations and write short research papers. The course utilizes an integrated approach that teaches both Standard and Lebanese Arabic based on communicative tasks and contexts and will use Al-Kitaab fii Ta'allum al-'Arabiyya: Part Three, to be supplemented by extra material as needed. By the end of the course, students are expected to reach Advanced-Mid to Advanced-High proficiency in Arabic following the ACTFL scale. Annually.

MEST 366 Advanced High Arabic (Intensive) 9 cr.
This course is designed for students who are placed at the Advanced-Mid level of proficiency of Arabic upon entering the program and it aims to take them to the Advanced-High level in the various language skills. Readings at this level are extensive and span a variety of genres; readings will cover at least one novel, short stories, academic articles, lengthy newspaper articles, and selections from medieval texts. Listening skills are sharpened through extensive work with news broadcasts, documentaries, and television shows in both Standard and Lebanese Arabic. Special emphasis is placed on understanding the nuances of the language and the use of idiomatic expressions and rhetorical devices in all the language skills. The course also features extended oral presentations in class where students demonstrate the oral skills of an educated native or near native speaker of Arabic. The course will use Al-Kitaab fii Ta'allum al-'Arabiyya: Part Three in addition to other readings assigned by the teachers. By the end of the course, students are expected to reach Advanced-High proficiency in Arabic following the ACTFL scale. Annually.

MEST 367 Superior Arabic (Intensive) 9 cr.
Students entering this level are expected to have Advanced-High proficiency in Arabic and are expected to make progress towards Superior proficiency. This level features extensive readings that cover a wide variety of genres including novels, short stories, academic articles, lengthy newspaper articles, and selections from medieval texts. Listening skills are enhanced through extensive work with news broadcasts, documentaries, and television shows in both Standard and Lebanese Arabic. Special emphasis is placed on understanding the nuances of the language and the use of idiomatic expressions and rhetorical devices in all the language skills. The course also features extended oral presentations in class where students demonstrate the oral skills of an educated native or near native speaker of Arabic. The course will use Al-Kitaab fii Ta'allum al-'Arabiyya: Part Three in addition to other readings assigned by the teachers in a variety of genres. Annually.

Lebanese Colloquial Arabic

MEST 380 Introductory Lebanese Colloquial Arabic (Intensive) 9 cr.
This course is designed for students who have had little or no previous exposure to Arabic and would like to gain basic proficiency in Lebanese Arabic (LA). The course builds proficiency in LA through a communicative-based approach. Through video and text materials that deal with a wide variety of communicative functions and tasks and that are rich in cultural content, students will develop their speaking and listening skills in LA. In addition, they will be able to contextualize these skills in culturally-appropriate contexts and demonstrate their understanding of the diverse products, practices, and perspectives of Lebanese culture and society. The course will introduce students to the Arabic alphabet and to an extensive vo-

cabulary and grammatical structures that will enable them to interact with speakers of LA in contexts related to the Novice and Intermediate levels of proficiency with ease and confidence. The course will focus on discussing topics of personal and public interest, describing and narrating personal experiences, delivering presentations, watching and analyzing TV programs, soap operas and films, and listening to songs. The course utilizes a wide variety of instructional materials developed by the CAMES Arabic teaching team. No prior knowledge of Arabic is required for the course. Annually.

MEST 382 Intermediate Lebanese Colloquial Arabic (Intensive) 9 cr.
This course is designed for students who already have some knowledge of Standard Arabic and/or Lebanese Arabic (LA) but want to devote more attention to developing higher level of proficiency in LA. The program provides students with the opportunity to improve their Lebanese colloquial Arabic skills through a wide variety of activities, including discussing topics of personal and public interest, describing and narrating in detail, holding conversations and debates, stating and supporting opinions, delivering presentations, watching and analyzing TV programs, soap operas and films, and listening to songs and music. In addition, the program helps students develop familiarity with and understanding of the diverse products, practices, and perspectives of Lebanese culture and society. The program utilizes a wide variety of instructional materials developed by the CAMES Arabic teaching team. The prerequisite for this program is one year (two semesters or the equivalent) of Arabic study. To ensure proper placement in the program, a Skype oral interview is required of all applicants. Annually.

MEST 384 Advanced Lebanese Colloquial Arabic 9 cr.
The Advanced Lebanese Colloquial Arabic class enables students to further develop their speaking and listening skills in Lebanese Arabic with special attention to expanding their knowledge of Lebanese culture. Students in the course are exposed to a variety of historical, social, economic, touristic, and artistic topics related to Lebanese Arabic language and culture. The class enhances students' listening skills by exposing them to different uses of the Lebanese dialect in authentic frames such as news reports, television and Internet series. Conversation skills are developed by encouraging students to speak in a participatory manner during the extensive discussions of the materials in class, with emphasis on pronunciation and speaking the Lebanese dialect properly. The class encourages students to use the general vocabulary used in daily life situations in a precise and smooth manner, and enriches their linguistic reserve by exposing them to a large amount of vocabulary and expressions related to the historical, social, economic, touristic, media and artistic fields. This enables students to use more complex and advanced structures and to master the use of certain verbs and words of recurrent use in the Lebanese dialect that have multiple meanings. The class demonstrates the similarities and differences between Lebanese Arabic and Standard Arabic, allowing students to learn how to move between the two with ease and helping them to understand the sociolinguistic contexts in which these Arabic varieties are used. Annually.

The Prince Alwaleed Bin Talal Bin Abdulaziz Alsaud Center for American Studies and Research (CASAR)

Director:	Myers, Robert
Professors:	Myers, Robert
Program Coordinator:	Baghdadi, Rana
CASAR AUB Advisory Committee:	Esanu, Octavian; Halaoui, Lara; Hanafi Sari; Harb, Sirene; Waterman, Adam

The Center for American Studies and Research (CASAR) aims to promote dialogue about issues in American Studies through research, teaching, and outreach. The center offers a Minor in American Studies and sponsors conferences, seminars, and public lectures. It also promotes research activities, particularly in the area of American encounters with the Middle East.

The Center for American Studies and Research (CASAR) works to establish and maintain a world-class locus of activity and exchange of ideas for an interdisciplinary community of researchers, teachers, students and others in the Middle East interested in building further understanding of American institutions and practices (political, social, economic, cultural) and the complex contextual realities in which these institutions and practices have developed and currently exist.

Minor in American Studies

American Studies is an interdisciplinary field that critically examines the connections among American literature, arts, culture, religions, economics and politics. The Center for American Studies and Research (CASAR) has a particular interest in encounters between the United States and the Middle East.

Interested students can declare a Minor in American Studies by going to the “Minors” part of the FAS website.

Requirements for a Minor in American Studies, 15 credits (minimum):

- AMST 215 Introduction to American Studies (3 credits)
- One other AMST course (3 credits)
- Three elective courses from other departments with American Studies content or relevance (9 credits total)

Qualifying Course Options

Core Course (required): AMST 215 Introduction to American Studies

American Studies elective (any one required): AMST 220 Shock of Modernity in America; AMST 230 Cultural Geography of North American; AMST 240 America in the Middle East/ Middle East in America; AMST 265/266 Special Topics in American Society (carries Social Science credit); AMST 275/276 Special Topics in American Humanities (carries Humanities credit)

Electives from other departments (at least three courses required):

- ARCH 023 Form, Event, Ideology: The American City as Case Study
- ENGL 209 Survey of American Literature
- ENGL 216 Drama
- ENGL 219 Film as Text
- ENGL 222 Literature and Cultural Studies
- ENGL 224 Early American Literature
- ENGL 225 Modern American Literature
- ENGL 226 Contemporary American Literature
- ENGL 241 Transnational Literatures
- HIST 200 Introduction to the History of the United States
- HIST 271 Race, Class, Gender: Introduction to American Social History
- HIST 272 Economic History of the United States
- HIST 273 The United States and the Middle East
- HIST 274 The United States in the Twentieth Century
- HIST 278/279 Special Topics in United States History
- MCOM 201 Intro to Media Studies
- MCOM 204 From Telegraph to Twitter: Media History (formerly 263)
- MCOM 219 Media Depictions of Society (formerly 262)
- MCOM 222 Introduction to Visual Culture Studies
- MCOM 290E On Television
- MEST 315M Making of the Modern Middle East
- PHIL 263A Contemporary Philosophical Movements: American Pragmatism and Its Critics
- PSPA 220 Globalization and Culture
- PSPA 237 The Middle East in International Politics since WWI
- PSPA 251 Politics and Government: United States of America
- PSPA 293D Senior Seminar in International Politics: US in the Middle East
- SOAN 215 Anthropology of America

In addition, new courses including special topics courses in other departments and programs may occasionally be related to American Studies. Students can petition to apply for such a course toward the requirements for the Minor, which must be approved first by the CASAR director and then by the FAS Curriculum Committee.

Courses

AMST 215 Introduction to American Studies 3.0; 3 cr.
This course begins with the question: What is America? Its approach is to explore the complex encounters that have shaped the cultures of the United States and the Americas. Equivalent to HIST 278/279. Annually.

AMST 220 Shock of Modernity in America 3.0; 3 cr.
Examines how Americans dealt with the first onslaught of commercial capitalism, industrial technology, and new modes of communication in the decades before the Civil War. A surge of nationalism and social tension fueled an orgy of expansion that created a continental super-state. The wrenching economic, social, and cultural changes of this era continue to resonate in the United States and in societies confronting modernity today. Annually.

AMST 230 Cultural Geography of North America 3.0; 3 cr.
An examination of the geography of cultures in the United States and Canada through multiple frameworks including regions, languages, religions, ethnicity, and gender. This course explores the roots and implications of these cultural patterns and considers cultural dynamics at several scales: the household, the city, the region, the nation, and the continent. It also investigates the economic and industrial evolution of cities and regions, the dynamics of public versus private space, the effects of mobility, the dynamics of border zones, diasporic communities, and globalization. Equivalent to HIST 278/279. Annually.

AMST 240 America in the Middle East/The Middle East in America 3.0; 3 cr.
This course historicizes contemporary United States military and economic involvement in the Middle East by considering the cultural history of U.S./Middle East relations from the mid-19th century to the present. An emergent area of transnational study within American Studies; studies of U.S./Middle East cultural relations are focused on policy, economic, cultural, and affective dimensions. Students will engage the field by analyzing primary documents, reading literature, and viewing visual and popular culture. Annually.

AMST 265/266 Special Topics in American Society 3.0; 3 cr.
A term-specific interdisciplinary course focusing on some aspect of American society. May be repeated for credit. This course carries social science credit. Occasionally.

AMST 275/276 Special Topics in American Humanities 3.0; 3 cr.
A term-specific interdisciplinary course focusing on some aspect of American arts. May be repeated for credit. This course carries humanities credit. Occasionally.

AMST 298 Tutorial in American Society 3.0; 3 cr.
A tutorial course offered to seniors completing the minor in American Studies who have an overall average of at least 80 and at least an 85 in the minor courses. This tutorial consists of independent research or directed reading in some aspect of American society, and includes the preparation of a report or thesis on the work. This course can be taken for 3 or 6 credits. This course carries social science credit. Offered on request.

AMST 299 Tutorial in American Humanities 3.0; 3 cr.
A tutorial course offered to seniors completing the minor in American Studies who have an overall average of at least 80 and at least an 85 in the minor courses. This tutorial consists of independent research or directed reading in some aspect of American arts and includes the preparation of a report or thesis on the work. This course can be taken for 3 or 6 credits. Offered on request.

Center for Language Research and Teaching (CeLRT)

Director:	Shaaban, Kassim A.
Professors:	Choueiri, Lina G.; Ghaith, Ghazi M.; Shaaban, Kassim A.
Associate Professors:	Hanafi, Sari; Orfali, Bilal W.
Assistant Professors:	Allen, Ira J.; Avant, Doyle R.; Kelly, Niamh; Majed, Rima; Nish, Jennifer M.; Vermy, A. Michael; Zimmerman, Erin

CeLRT is currently inactive. For more information, please contact the Center Director.

The proposed functions of the Center are the following:

- Providing language practitioners with professional support through workshops, panel discussions, forums, seminars, and discussions
- Establishing connections with professional organizations and supporting their goals and mission
- Holding a biannual conference on different topics in theoretical and applied linguistics and related fields (sociolinguistics, language acquisition, pragmatics, and mass communication)
- Publishing an electronic journal that addresses generic language issues as well as issues specific to the language situation and language education in the Middle East region
- Working on offering new postgraduate degrees in language related areas such as Creative Writing, Rhetoric and Composition, and Translation
- Offering consultation services in language-related areas
- Hosting visiting scholars and post-doctoral fellows
- Working on the establishment of new language-based interdisciplinary graduate programs at AUB, and
- Engaging in research in theoretical and applied linguistics and in language teaching and language learning

Science and Mathematics Education Center (SMEC)

Director:	El Mouhayar, Rabih
Professor:	BouJaoude, Saouma
Associate Professors:	Amin, Tamer; El Mouhayar, Rabih; Khishfe, Rola
Lecturer:	Osman, Enja

The overall mission of the Science and Mathematics Education Center is four-fold:

- to conduct and support quality research on the teaching and learning of science and mathematics at the pre-school, elementary, and secondary levels,
- to contribute to the development of quality science and mathematics teaching and research professionals,
- to design and provide ongoing professional development for science and mathematics teachers in Lebanon and abroad,
- and to effect a positive influence on the quality and status of school science and mathematics education locally, regionally, and internationally.

The Center currently accomplishes its mission through the performance of a variety of functions including, but not limited to:

- designing and teaching science and mathematics education courses for pre-service teachers and master's level graduate students in cooperation with the Department of Education,
- designing and conducting research on teaching, learning, and teacher professional development in science and mathematics,
- designing and developing instructional materials in science and mathematics for students and teachers,
- maintaining a current science and mathematics curriculum library for use by pre-service and in-service teaching professionals,
- providing outreach consultation in science and mathematics education for schools, institutions, and governments regarding curriculum design, the design of instructional environments, methods of evaluation, and professional development for teachers, and
- providing in-service professional development for teachers and subject-matter coordinators through special courses, workshops, institutes, conferences, or through participation in professional development initiatives sponsored by AUB or other institutions and organizations.

University Preparatory Program (UPP)

Lecturers:	Harkouss, Samar; Rahme, Joseph; Sadaka, Nadine
Full-time Instructors:	El-Harake, Rima; Peltekian, Katia
Part-time Instructors:	Almekkawi, Rola; Ramadan, Mahassen
Assistant Instructor:	Nabbouh, Salam

The University Preparatory Program (UPP) is a unit within the Faculty of Arts and Sciences. Its main objective is to address the specific English language needs of students who have completed high school with strong academic records but are unprepared to function in all-English curricula at the university level. The program also aims to develop the science and mathematics content competencies and computer skills of its students, as well as develop the requisite academic literacy, study skills, and information library skills needed for success in university studies.

UPP is a one-year program consisting of 25 contact hours per week. Its curriculum follows an integrated approach to the teaching of language skills (listening, speaking, reading, and writing) and a student-centered approach to the teaching of science and mathematics. Furthermore, the curriculum incorporates study skills, pronunciation training, and conversational English, depending on individual needs. The development of computer literacy, preparation for the critical reading part of the SAT reasoning test, and cultural orientation are also emphasized.

Applicants must have completed at least twelve years of schooling, or the equivalent, before beginning the program and must submit a UPP application with all supporting material. Completed applications are reviewed and students are notified of their acceptance or non-acceptance to UPP in due course.
Accepted applicants to UPP are assigned to a learning level based on their performance on a special English language test. This test measures the English language proficiency of learners and is used to place students into three proficiency levels. Other diagnostic tests specifically prepared for the program are used to determine the mastery level of various language skills and elements (listening, speaking, reading, writing, grammar, and vocabulary). In addition, applicants receive developmentally appropriate instruction based on their performance on science, math, and computer skills tests.

Promotion to a higher level is not automatic; learners must demonstrate that they have successfully met the instructional objectives set for the current level. The placement test may be administered again to serve as an indicator of the progress made by the learners over the period of one term. Successful completion of the program and admission to sophomore standing is determined on the basis of passing the UPP sequence of courses and attaining the scores on the TOEFL and SAT tests required for admission to regular AUB programs. Students wishing to enter the university with freshman standing must successfully complete the UPP sequence of courses. Furthermore, all UPP applicants to AUB must present a letter of good performance from the Program Director. They should also maintain a good attendance record. Students who miss more than one-fifth of the sessions of any section in the first

ten weeks of the term (five weeks in the case of the summer term) will be dropped from the program.
It is important to stress that students are required to complete the program, even if they attain the needed TOEFL and SAT scores before the term is finished. Failing to complete the program jeopardizes students' chances of admission to AUB.
The UPP also offers an Intensive English Summer Course for newly admitted graduate students coming from outside AUB who have not fulfilled the English Language Requirement. This course (a minimum of 20 contact hours per week) aims at enabling these students to function effectively in all-English curricula.

Courses

UPEN 001 0 cr.
This course is designed for beginning UPP students who have little or no knowledge of English. It provides learners with basic listening, speaking, reading, and writing skills, enabling them to understand and take part in English conversations, in addition to reading simple stories and responding to them in writing.

UPEN 002 0 cr.
This course is designed for low-intermediate UPP students who possess limited language skills but can initiate conversations and read and/or write a paragraph or several paragraphs. Word-building and study skills, in addition to more sophisticated reading and writing skills, are introduced to enable these college-bound students to cope with the tasks required of them in the future. There is also emphasis on orientation to the American model of education, and to living in a diverse ethnic and cultural environment.

UPEN 003 0 cr.
This course is designed for high intermediate UPP students who can communicate well both in conversation and in writing. It serves as a transition from intensive English courses to regular academic study. Students read various texts, give oral presentations, receive cultural orientation, and practice their academic writing and basic research skills.

UPEN 004 SAT Writing and Critical Reading 0 cr.
This course prepares students for the writing and critical reading sections of the Scholastic Aptitude Test (SAT Reasoning) required of all undergraduate students joining AUB. Emphasis is placed on critical reading skills, college writing skills, vocabulary building, and standardized test-taking strategies.

UPMA 001 SAT Math 0 cr.
This course prepares students for the math section of the Scholastic Aptitude Test (SAT Reasoning) required of all undergraduate students joining AUB. Emphasis is placed on mathematical terminology, arithmetic skills and concepts, word problems, geometric concepts and reasoning, in addition to standardized test-taking strategies.

UPMA 002 0 cr.
This course reviews the fundamental operations with algebraic expressions (exponents, radicals, logarithms, factoring, algebraic quotients, absolute value). It introduces elementary functions with graph representations: linear, quadratic, polynomial, rational, exponential and logarithmic. It includes methods to solve systems of linear equations and inequalities, Matrices, Sequences, and Series.

UPMA 003 0 cr.
This course introduces the principles of permutations, combinations and other counting principles, elementary notions of probability and statistics. The last part of the course emphasizes fundamental notions in calculus: limits and continuity, differentiation, indefinite and definite integrals, & the fundamental theorem of integration calculus.

UPSC 001 Science 0 cr.
This course is a science literacy course that introduces students to major concepts in the physical and life sciences and their applications in everyday life. It emphasizes in-depth conceptual understanding of science concepts by using a variety of teaching approaches. Additionally, the course introduces students to scientific terminology in English to prepare students to take science courses at the university level.

UPIT 001 Information Technology 0 cr.
This course is a computer literacy course that is an introduction to micro-computer applications for Windows. It includes an overview of Windows, Microsoft Word, Excel, PowerPoint and essential email and Internet skills.

UPHU 001 Humanities 0 cr.
This course aims to introduce students of UPP to the humanities, through an examination of how the human has attempted to understand and express itself, its values, its condition, and its history. This will be addressed through a close encounter with selections ranging in time and space (from the ancient classics, through the medieval cultures, to the 19th and 20th centuries), and from a varied array of expressions in the humanities (literature, philosophy, and various forms of the arts).

The Zaki Nassif Program for Music (ZNPM)

Chairperson:	Nassif, Nabil
Academic Committee:	Jureidini, Wadi; Sadek, Walid; Orfali, Bilal; Taher, Ali; Touma, Jihad

The Zaki Nassif Program for Music was inaugurated in December 2004.

Objectives

The Program aims to preserve and promote the musical heritage of Zaki Nassif, together with the heritage of Nassif's contemporary musicians, and to foster excellence in the teaching of music by contributing to its advancement through a variety of activities that include:

- Organizing competitions, concerts, conferences, and seminars
- Inviting professional musicians and academics to the university
- Awarding prizes, scholarships, and fellowships to students in the name of Zaki Nassif
- Reinstating and sustaining courses and programs in musical studies and practice at AUB, in both the Continuing Education Center, and in the department of Fine Arts and Arts History
- Recruiting quality musicians, scholars, to initiate and run those music courses and programs

The Center for Arts and Humanities (Mellon Grant)

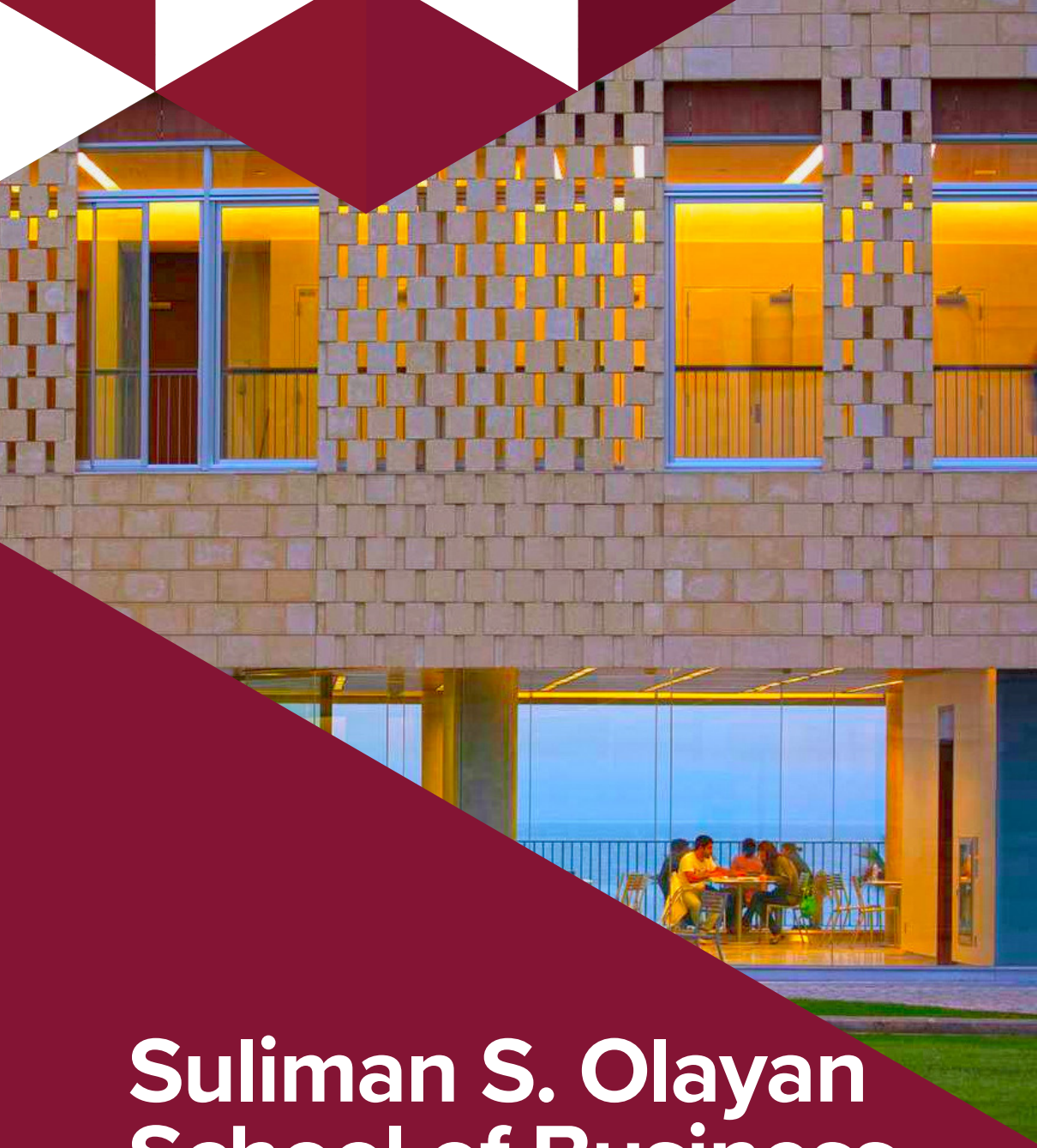
Director:	Brassier, Raymond
Program Manager:	Bassil, Rita

AUB's Centre for Arts and Humanities (CAH) seeks to increase understanding and appreciation for the Arts and Humanities both inside and outside the university. Hosting a diverse array of cultural events, including lectures, exhibitions, plays, films, and performances, CAH provides a forum for research and debate in the Arts and Humanities. These events are intended to enrich cultural engagement and dialogue not only for faculty and students on campus but also for the wider intellectual community in Beirut and beyond. CAH creates forums for scholarly collaboration and exchange, organizing workshops and symposia to facilitate the exploration of new and challenging ideas. It also fosters exchanges between artists and writers, encouraging creative collaboration to broaden AUB's intellectual landscape. Building regional relationships, CAH has established ties and exchanges with universities in Lebanon and the wider region, contributing to a vibrant network of academic and cultural connections. It has been instrumental in organizing significant conferences at AUB, sparking debate and inquiry within the university and the broader community.

The Writing Center

Interim Director:	Baalbaki, Rula
Administrative Assistant:	Takkoush, Sarah

The Writing Center's mission is to support the teaching and learning of writing on campus. Established in 2004, the Writing Center performs this work through its peer tutoring program, support for General Education Writing in the Disciplines courses and special projects and events at AUB and beyond. We are committed to research and outreach to the larger community. The Writing Center supports AUB students, staff, and faculty via one-on-one consultations and workshops on individual or group writing projects at any stage of development. Undergraduate and graduate students serve as tutors who work to help individuals become stronger writers in both English and Arabic. Appointments may be made on our online scheduler at https://aub.mywconline.com or by phone. Writing resources and more information about Writing Center tutors and services are located on our website at https://www.aub.edu.lb/fas/writing_center/Pages/default.aspx. The Writing Center supports faculty members via writing workshops, small group meetings, and individual consultations. Writing Center staff collaborate with faculty members as they develop, assess, and revise courses complying with the General Education-mandated requirement to offer Writing in the Disciplines instruction in every major. Workshops for programs or departments and individual consultations for faculty seeking to improve writing assignments and activities in their courses can be scheduled by emailing or calling the Writing Center. The main Writing Center office is located in Ada Dodge Hall, room 214. Contact the Writing Center by email at writingcenter@aub.edu.lb or by phone at AUB extension 3157.



Suliman S. Olayan School of Business (OSB)

Undergraduate Program

Fadlo Khuri	President of the University
Zaher Dawy	Provost
Yusuf Sidani	Dean
Lama Moussawi	Associate Dean for Research and Faculty Development
Victor Araman	Associate Dean for Programs
Fouad Zablith	Associate Dean for Online Learning and Program Development
Bradley Jon Tucker	Registrar
Antoine Sabbagh	Director of Admissions
Fida Afiouni	Associate Provost
Lokman Meho	University Librarian

Professional Administrators

Abir Sinno	Director of Strategic Initiatives and Continuous Improvement
David Matta	Director of Career Management Services
Dania El-Ashi	Senior Service Delivery Manager
Layan Sarkis	Administrative Affairs Manager
Amal Shbaro	Administrative Assistant to the Dean
Mohammad Hasan Senan	Accreditation Officer
Nada Khalidy Kouzi	Facilities and Events Manager
Zeina Succar	Financial Officer

Program Directors and Coordinators

Zeina Harfoush Nsouli	Executive Director of the Undergraduate Program
Maya El Helou	Director of Graduate Programs
Yasmeen Makarem	Director of the MHRM Program
Patrick Fitzgerald	EMBA Director, Acting Associate Dean for Executive Education
Mohammad Faour	Director of the MFIN Program
Walid Nasr	Director of the MSBA Program
Wassim Dbouk	Director of the Investment Management Program
Hagop Panossian	Director of the International Case Competition Program

Center Directors

Bijan Azad	Director of the Darwazah Center for Innovation Management and Entrepreneurship
Nada Naufal	Director of the Rami Fouad Makhzoumi Initiative in Corporate Governance
Nada Khaddage	Director of the Center for Inclusive Business and Leadership for Women (CIBL)
Randa Salamoun	Director of the Case Hub Initiative

Middle East Advisory Board

Elissar Farah Antonios	Chief Executive Officer of Citi Bank	UAE
Karim Baalbaki	Managing Director, BCI Holding S.A.| Lebanon
Tarek Daouk	CEO, Dentsu Aegis Network| MENA
Charbel Fakhoury	Vice President Enterprise Services, Microsoft	Middle East & Africa
Rana Ghandour Salhab	Member of the Middle East Board of Directors and Executive Committee at Deloitte	Middle East
Daniel A. Szpiro	Dean	MARIST School of Professional Programs
Bader N. Al-Kharafi	Vice Chairman & CEO, Zain Group| MENA
Raja Assili	Chief Executive Officer at Qatari Investors Group QSC
Dipak C. Jain	Former Dean	U.S.

The Finance, Accounting and Managerial Economics Track

Convener:	Jamali, Ibrahim
Professors:	Elfakhani, Said; Safieddine, Assem
Associate Professors:	Dbouk, Wassim; Ismail, Ahmad; Jamali, Ibrahim; Mazboudi, Mohamad
Assistant Professors:	Faour, Mohamad; Abou Tanos, Barbara; Harakeh, Mostafa
Visiting Assistant Professor:	Ahmed, Neveen
Senior Lecturers:	Azzam, Henry; Ghanem, Abdel Jalil; Tannir-Fawaz, Lina; Uwaydah-Mardini, Rania
Lecturer:	Hout, Bassima

The Management, Marketing and Entrepreneurship Track

Convener:	Safieddine, Assem
Professors:	Sidani, Yusuf
Associate Professor:	Afiouni, Fida
Visiting Associate Professor	Samara; Georges
Assistant Professors:	Itani, Mona; Joseph, Jay; Saade, Nathalie; Makarem, Yasmeen; Abi Aad, Amine; Merhabi, Mohamad-Amir; Al Chami, Rola; El Kebbi, Amr
Senior Lecturers:	Abdallah, Hanin; Dimechkie, Riad; Panossian, Hagop; Khauli, Leila; Wahbi, Marwan
Lecturer:	Kfoury, Jessy
Instructor:	Kfouri, Michael

The Business Information and Decision Systems Track

Convener:	Fleszar, Krzysztof
Professors:	Osman, Ibrahim; Fleszar, Krzysztof Araman, Victor; Azad, Bijan; Moussawi, Lama
Associate Professors:	Bou Hamad, Imad; Nasr, Walid, Zablith, Fouad
Assistant Professors:	Khreich, Wael; Salamoun, Randa
Visiting Assistant Professor:	Taleb, Sirine
Senior Lecturer:	Geutcherian, Rita
Lecturer:	Majdalani, Elie

History and Overview

Business Education at AUB started in 1900 and was provided either by a department or by a semi-autonomous school under the university's Faculty of Arts and Sciences for approximately one hundred years. In celebration of the hundred-year anniversary of offering business programs, AUB established an independent school of business (later named the Suliman S. Olayan School of Business, OSB) in September 2000 as the sixth faculty of the university.

To date, AUB has graduated over 8,000 students from its undergraduate business programs and over 1,750 from its graduate business programs. Since its formal establishment as a distinct school, OSB has grown its full-time faculty complement from 13 members in the academic year 2000-2001 to 48 members today. It now graduates approximately 290 students from its undergraduate program and more than 180 students from its graduate programs.

OSB currently offers five degree programs which include an Executive Master of Business Administration (herein referred to as the Executive MBA), a Master of Business Administration (herein referred to as the MBA), a Master's in Finance (herein referred to as the MFIN), a Master's in Human Resource Management (herein referred to as the MHRM), a Master's in Business Analytics (herein referred to as the MS-BA) and a Bachelor of Business Administration (herein referred to as the BBA).

The First AUB Faculty to be Named

In June 2003, the AUB School of Business was named the Suliman S. Olayan School of Business (herein referred to as OSB) in honor of the late international Saudi businessman and AUB trustee whose family has always been a major supporter of AUB.

This watershed event triggered a series of major developments intended to broaden and deepen the delivery of quality undergraduate and graduate business programs at AUB. An entirely new curriculum was introduced for the BBA and MBA degrees in Fall 2001. Both degrees were redesigned to follow leading trends in international business education. In Spring 2004, OSB launched the Executive MBA program in response to the professional development needs of senior corporate leaders in the region. In 2012, OSB introduced a Specialized Master's in Finance and a Specialized Master's in Human Resource Management, and in 2017 introduced a Master of Science in Business Analytics, to its suite of graduate degree program offerings as part of its strategy to better serve the region, increase its graduate enrollment and further enhance AUB's global brand as the regional business education leader.

Accreditation

The degree programs of OSB are accredited by the Association to Advance Collegiate Schools of Business (AACSB International).

Requiring rigorous quality audits and adherence to best academic practices, AACSB accreditation, which is attained by fewer than 5 percent of business schools worldwide, is the international quality assurance standard for business education programs. Initial accreditation was achieved in 2009, and as per AACSB re-accreditation guidelines, OSB was re-accredited in 2014 and more recently in 2019, marking 10 years of AACSB accreditation.

Vision

The Suliman S. Olayan School of Business' vision is to transform business thinking in the MENA region.

Mission

The Suliman S. Olayan School of Business' mission is to enable world-class business research, learning and knowledge transfer from our authoritative anchor point within the MENA region.

LEADERS Values

Lifelong Learning | We see business education as an enduring journey perpetually nurturing curiosity and fostering innovation. We aim to remain at the cutting edge of business thought and practice, embodying the belief that learning never ceases.

Empowerment | We inspire individuals to explore new horizons, innovate boldly, and take on leadership roles. We foster a culture where leaders are cultivated to drive change and make significant contributions.

Agility | Agility underscores our adaptability to rapidly changing business environments. We strive to remain proactive, flexible, and robust in strategy and action, embodying

versatility in academic, research, and community engagement.

Diligence | Diligence drives us to continually refine our processes, enhance our programs, and achieve exceptional results with integrity and responsibility. We are passionate about preparing leaders who are deeply devoted to their craft and community.

Excellence | Excellence in teaching, research, and service inspires us to push boundaries, innovate tirelessly, and uphold the highest standards of quality, preparing future leaders for unrivaled success in the global marketplace.

Respect | Respect fosters an environment where dignity, diversity, and dialogue flourish. We are committed to honor the perspectives and contributions of all stakeholders, fostering a culture of psychological safety where everyone thrives.

Sustainability | We strive to integrate environmental stewardship, societal well-being, and economic prosperity into our curriculum, intellectual contributions, and operations. We aspire to develop leaders with the skills and passion to provide sustainable solutions for global challenges.

Ethics and Integrity at OSB

OSB is committed to the highest standards of academic integrity and expects its faculty and students to exhibit exemplary behavior in this regard. All business students are responsible for familiarizing themselves with and always abiding by the AUB policies, rules and regulations that define standards for academic integrity.

Organization and Governance

The Suliman S. Olayan School of Business (OSB) is managed by the dean, associate deans, track conveners, program directors and the professional administrators of the school. Track conveners report directly to the dean of the school. The school is guided by the Middle East Advisory Board, a board composed of accomplished regional thought leaders and trendsetters in business. It operates under a set of school bylaws available at the following web address:

https://aub.policytech.eu/dotNet/documents/?docid=149&public=true

OSB is organized into the functional equivalent of multidisciplinary departments, referred to as tracks. While each track has its distinct identity and designated faculty members, a track is markedly different from a department; it allows for multiple faculty membership, offers fertile soil for cross-disciplinary synergy, and facilitates faculty cooperation.

The school has three tracks, each encompassing a cluster of distinct academic business disciplines and headed by a track convener:

The tracks are:

- Finance, Accounting and Managerial Economics (FAME)
- Management, Marketing and Entrepreneurship (MME)
- Business Information and Decision Systems (BIDS)

Undergraduate Program: BBA Program

OSB currently offers a bachelor's degree in business administration (BBA).

Philosophy

The BBA program is for university entrants focused on translating their thinking and interests into career opportunities in business. The program combines business and arts and sciences in a rigorous learning environment to help students gain a holistic understanding of the social, cultural and economic environment in which they operate. The curriculum's liberal arts-based operational focus is deeply grounded in analytics while emphasizing soft skill areas such as leadership, decision-making and ethical reasoning.

Admission to the Program

Normally, there are two admission deadlines a year which are in February, for enrollment the following fall, and in November, for enrollment the following spring.

Criteria for Admission to the BBA Program

Students are admitted as sophomores to the BBA program either through direct admission, transfer from other faculties at AUB or transfer from other universities. Students may also be admitted as junior transfers from other faculties at AUB or from outside AUB

Direct Admission

These students are normally admitted directly from secondary school into the sophomore class at OSB. For complete and detailed information regarding admission to the university, see the Admissions section of this catalogue. All direct admissions are decided by the university Unified Admissions Committee.

Transfer into OSB

As per OSB's bylaws, all transfer decisions are made by the school's Undergraduate Admissions Committee.

Transfer from the Freshman Class of the Faculty of Arts and Sciences

Eligibility conditions are:

- Successful completion of at least 26 freshman credits (advanced placement credits inclusive)
- A minimum cumulative GPA of 3.0
- A minimum grade of B in one of the following courses: MATH 100, MATH 101, MATH 102 or MATH 203

All final admission decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Transfer from Other Faculties at AUB

Non-OSB students at AUB, other than those from the freshman class of the Faculty of Arts and Sciences, may apply for a transfer to OSB in order to pursue a BBA degree. To be eligible for an internal transfer, the applicant must:

- have completed at least 24 sophomore credits (or 54 credits including freshman credits).
- not be on probation.
- have achieved a minimum cumulative GPA of 3.0.

Students with an overall GPA of less than 3.0 and have met the above conditions may be considered (through a petition at OSB) for an internal transfer, provided they have a minimum GPA of 3.0 in any 5 of the following courses: ACCT 210, FINA 210 (or FINA 211), INFO 200, DCSN 200, MNGT 215, MKTG 210, ACCT 215, DCSN 205 and BUSS 215.

All final admission decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

It is important to note that for transfer purposes, late freshman students who have taken more than 30 credits but less than or equal to 45 credits are treated as freshman students (i.e., they must meet freshman transfer requirements).

Transfer from Outside AUB (Other Universities)

Students currently pursuing an undergraduate degree at another university in Lebanon or abroad may apply for transfer to the OSB sophomore or junior class. To be eligible for admission to AUB and to OSB's business program, the applicant must:

- be transferring from an appropriately accredited university or institution of higher education recognized by AUB.
- have completed at least 24 sophomore credits (or 54 credits inclusive of the freshman year).
- have achieved a minimum overall cumulative average equivalent to the AUB GPA of 3.0; applicants should meet the Readiness for University Studies in English before registration.

All final admission decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

It is important to note the following:

- Transfer of credit is considered only for courses completed in the five-year period preceding the proposed date of joining the BBA program.
- A student transferring to OSB from another institution will not be granted equivalency credits for core business courses. Core business courses are: ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 239, BUSS 245, BUSS 249, DCSN 200, FINA 210, INFO 200, MKTG 210 and MNGT 215.
- The student is required to achieve a minimum grade of "B" in all business courses for which transfer credit is sought.

- The Undergraduate Student Academic Affairs and Curriculum Committee reserves the right to require the student to sit for an exemption test prior to the approval of transferred courses. An exemption test may be taken only once.

Business as a Second Degree

The OSB Undergraduate Admissions Committee evaluates all applications for the BBA as a second degree and makes recommendations to the Dean. To be eligible for admission, the student must have a first degree from an appropriately accredited institution of higher education recognized by AUB with a cumulative GPA of no less than 3.0 (or its equivalent).

All final admission decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Application process is available in the General University Academic Information section of the catalogue.

Dual Degree

Students may, upon approval of the concerned faculty, complete the requirements for a second degree while registered in another faculty at AUB. In such a case, a student will be granted two degrees at the same time upon graduation. If tuition differs, students will pay the higher of the tuitions. To be eligible for a dual degree with OSB, the applicant must:

- have completed at least 24 sophomore credits (or 54 credits including freshman credits).
- not be on probation.
- have completed all minor business courses: ACCT 210, FINA 210 (or FINA 211), INFO 200, DCSN 200, MKTG 210, and MNGT 215.
- achieved a minimum overall cumulative GPA of 3.0.

All final admission decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Students interested in a dual degree must submit a dual degree petition form through the Online Petitions and Forms System (OPFS).

Business as a Minor Field of Study

Students who wish to obtain a minor in Business are required to:

- Complete a minimum of 18 credit hours in the following business courses: ACCT 210 (Financial Accounting, 3 cr.), DCSN 200 (Operations Management, 3 cr.), FINA 210 (Business Finance, 3 cr.) or FINA 211 (Introduction to Finance for Engineers, 3 cr.), INFO 200 (Foundations of Information Systems, 3 cr.), MKTG 210 (Principles of Marketing, 3 cr.) and MNGT 215 (Fundamentals of Management and Organizational Behavior, 3 cr.)
- Pass the required six courses (ACCT 210, FINA 210 or FINA 211 (Introduction to Finance for Engineers, 3 cr.), MNGT 215, MKTG 210, INFO 200 and DCSN 200) and maintain a minimum overall GPA of 3.0 in all business courses taken. FINA 211 waives FINA 210 for Engineering students. Other non-business students will receive credits only for either FINA 210 or FINA 211.

It is important to note the following: No business courses required by the faculty in which the student is pursuing her/his major field of study (the "major faculty") may be counted toward the business minor. In cases where a student has taken business courses as required by the student's major faculty, the student must take additional business electives to achieve the total 18 credits required for the minor. In all cases, course prerequisites, as stipulated in OSB's curriculum, apply and are strictly enforced.

Business Sustainability as a Minor Field of Study

Students who wish to obtain a minor in Business Sustainability are required to complete 18 credit hours as follows:

- A required course in corporate sustainability BUSS 224 (Business and Sustainability, 3 cr.)
- Two business courses from the following list: ACCT 210 (Financial Accounting, 3 cr.), DCSN 200 (Operations Management, 3 cr.), FINA 210 (Business Finance, 3 cr.) or FINA 211 (Introduction to Finance for Engineers, 3 cr.), MKTG 210 (Principles of Marketing, 3 cr.), and MNGT 215 (Fundamentals of Management and Organizational Behavior, 3 cr.).
- One business sustainability course from the following list: DCSN 214 (Sustainable Supply Chain Management, 3 cr.), FINA 249 (Introduction to Sustainable Finance, 3cr.), ENTM 240 (Social entrepreneurship, 3 cr.), or another pre-approved business sustainability course. (Course prerequisites apply and are strictly enforced. DCSN 200 is a prerequisite for DCSN 214, ACCT 210 and FINA 210 are prerequisites for FINA 249)
- Two courses in the science of sustainability and/or sustainability policy from the list below or other pre-approved courses.
    - CHEM 202 Introduction to Environmental Chemistry (3 cr.)
    - ENHL 220 Fundamentals of Environmental Health Sciences (3 cr.)
    - GEOL 227 Alternative Energy and Climate Change (3 cr.)
    - GEOL 290B/ AROL 235AJ/ Climate and Human Societies (3 cr.)
    - LDEM 203 The Environment and Sustainable Development (3 cr.)
    - LDEM 230 Water and the Environment (3 cr.)
    - LDEM 262 Healing Nature: Theoretical Perspectives and Applications (3 cr.)
    - MSCU 201 Coastal and Marine Environments: Introductory Course (3 cr.)
    - MSUC 204 Coastal and Marine Environments: Maritime Cultural Heritage (3 cr.)
    - PHIL 209 Environmental Ethics (3 cr.)
    - Capstone project (3 cr.)
    - Other pre-approved courses from OSB or outside OSB

It is important to note the following: No business courses required by the faculty in which the student is pursuing her/his major field of study (the "major faculty") may be counted toward the business minor. In cases where a student has taken business courses as required by the

student's major faculty, the student must take additional business electives to achieve the total 18 credits required for the minor. In all cases, course prerequisites, as stipulated in OSB's curriculum, apply and are strictly enforced.

For further information on Minors, refer to the General University Academic Information section of the catalogue.

Academic Policies

For more information on registration requirements, categories of students, class attendance, correct use of language, cross registration, course (and credit) loads, dean's honor list, directed study, disclosure of student records, English proficiency, grading system, graduation with distinction and high distinction, and policy on transfer within the university, refer to the General University Academic Information section of this catalogue.

Other OSB-specific academic rules and regulations follow.

Academic Advisors

Each BBA student is assigned an academic advisor who plays the role of a mentor. The advisor communicates the culture of the institution, mainly as it relates to "life-long learning, personal integrity and civic responsibility and leadership" (AUB Mission Statement) and plays an important role in guiding students through a curriculum that balances broad liberal arts exposure with deep knowledge of business fundamentals. In addition, the advisor helps students assess future graduate studies opportunities and career choices.

Classification of Students

A BBA student shall be considered to have completed a class level (i.e. freshman, sophomore, junior or senior) when s/he has successfully completed 30 or more credits beyond the requirements for the previous class. A student may be granted a certificate stating that s/he has completed a class only when s/he has completed the specified courses in the regular program for that class and has acquired the requisite number of credits.

The credit requirements are as follows:

- For the completion of the freshman class: 30 credits
- For the completion of the sophomore class: 60 credits (cumulative)
- Requisite number of credits.

Credit Load

Students may register for up to 17 credit hours in a regular academic term (e.g. fall or spring) and up to 9 credit hours in the summer term. Junior and senior, but not sophomore, students who wish to increase their credit load to 18 credit hours a term must have completed ENGL 203 and ENGL 204 and then petition the OSB Undergraduate Student Academic Affairs and Curriculum Committee for permission to do so. Normally, junior and senior students with an overall GPA of at least 3.3 or a GPA of at least 3.3 in the last two terms are given such permission.

The credit load of students who are placed on probation is available in the General University Academic Information section of the catalogue.

Students who are registered in the BUSS 245 course (internship) may register for no more than 3 other credit hours, provided that the other course(s) taken do not conflict with the working hours of the summer internship. Honor students may petition to be allowed to register for a maximum of 7 credit hours, including internship.

Internship Requirements

All BBA students must successfully complete the internship requirement (BUSS 245). Normally, the internship takes place in the summer term directly following the completion of the junior year. Students must register for the summer internship and provide the school with an employer's acceptance. All students applying for the internship program must:

- Be juniors or seniors who have completed the following courses by the end of the spring term: FINA 210, MNGT 215, MKTG 210 and INFO 200.
- Have completed the following by the end of the fall term:
  - at least 38 credit hours if they were admitted to the university as sophomores.
  - or at least 68 credit hours if they were admitted to the university as freshmen.

Internship Guidelines

- The internship is normally eight weeks in duration and takes place during the summer term (i.e., any eight weeks between mid-May and end of August).
- The student must comply with the policy of the host company regarding working days and working hours.
- The workweek must not be less than 5 working days.
- Working hours are according to host company policies.
- The student may choose to complete his internship locally or abroad.
- The student will be supervised by a faculty member from OSB and the work supervisor at the company throughout the internship period.
- The internship is graded. The grade is based on the evaluations of both the direct work supervisor and the OSB faculty supervisor.
- The internship grade is included in the computation of the student's overall average.
- The student cannot do her/his internship at a family business.

Career Readiness Program

Career Readiness is an optional structured program that allows students to complete the requirements of the BBA degree while gaining significant work experience. It is a committed partnership between OSB and a selective number of companies to provide students with experiential learning opportunities and an in-depth understanding of the workplace by the time they graduate. Based on the principle that learning works best

when academic achievement is enriched with practical experience, the program provides a match between employers seeking well-educated student talents and students seeking to reskill and upskill in a work integrated learning environment.

The program offers two courses: **CO-OP** education (BUSS 255) and **Advanced CO-OP** education (BUSS 256). These are 3 credits courses that are optional. Students who successfully complete BUSS 255 (3 credits) are exempted from the BUSS 245 Internship course; only one credit will count towards the 120 credits required to complete the BBA degree. All other CO-OP credits are not counted towards the BBA degree requirements.

Upon completing the CO-OP and/or Advanced CO-OP education, students will receive a Certificate of Completion (specifying the work duration) in addition to their BBA degree.

After each CO-OP education course, students must spend one semester as a full-time student at OSB.

To enroll in the **CO-OP education course (BUSS 255)**, students must have applied and be selected in the preceding semester. Selection to the course is based on academic performance, CV, interview, and a reference letter. Moreover, students must have completed 36 credits by the time of enrollment, including all the prerequisite courses, with a cumulative GPA of 3.0 or better.

To enroll in the **Advanced CO-OP education course (BUSS 256)**, students must have successfully completed the CO-OP education course (BUSS 255) followed by one semester as a full-time student. Students must have applied and be selected in the preceding semester. Selection to the course is based on academic performance, CV, interview, and a reference letter. Moreover, students must have completed 48 credits by the time of enrollment, including all the prerequisite courses, with a cumulative GPA of 3.0 or better.

Note: The final enrollment into either course is subject to the availability of vacancies approved by the Career Readiness Program office and the partner company's requirements.

Academic Probation

Placement on Academic Probation

University regulations apply. Refer to the General University Academic Information section of this catalogue.

In addition, note the following:

- Students who are attending 4 courses including BUSS 211 (i.e. with a load of 11 credits) are subject to probation regulations.
- If a student on probation drops the whole term, that term is not counted for continued probation purposes.

Removal of Probation

University regulations apply. Refer to the General University Academic Information section of this catalogue.

Dismissal

University regulations apply. Refer to the General University Academic Information section of this catalogue.

Readmission

University regulations apply. Refer to the General University Academic Information section of this catalogue.

Normally, transfer credits are considered from AACSB accredited universities and after evaluation of a student's coursework. The student must have achieved a minimum grade equivalent to the AUB GPA of 3.0 in each of the courses for which transfer of credits may be granted.

Regulations on readmission also apply to students who are dropped from other AUB faculties and apply for admission to OSB.

Readmission of students dropped from the school by the Undergraduate Student Academic Affairs and Curriculum Committee requires the approval of that Committee, whereas readmission of students dropped from other AUB faculties requires the approval of the OSB Admissions Committee.

Failing and Repeating Courses

University regulations apply. Refer to the General University Academic Information section of this catalogue.

A student who at the end of the senior year fails to fulfill the graduation requirements pertaining to cumulative grade averages and is not dismissed must repeat the courses with low grades in order to raise the overall averages to the required minimums.

Incompletes (Final Exam Policy)

A student who, at the end of a term, is missing a major requirement of a course (e.g., final examination), s/he (or her/his family member) must, within 72 hours of the final exam date, submit a paper or online makeup petition along with evidence of a valid excuse. Medical reports and/or qualified professional opinions issued by an AUBMC doctor or by the University Health Services are normally accepted. Should the validity of an excuse be in question, the OSB Undergraduate Student Academic Affairs and Curriculum Committee may not allow the student to sit for a makeup examination.

If granted permission, the student should be ready to take the makeup exam during the final exams period. In rare and exceptional circumstances, the OSB Undergraduate Student Academic Affairs and Curriculum Committee may grant the student additional time, normally no later than the first month of the subsequent term. A student who has already sat for a final examination may not re-take that examination.

Incomplete coursework is reported as an "I" followed by a numerical grade reflecting the evaluation of the student based on available information. The evaluation is based on a grade of zero on all missed work and is reported in units of five. If the work is not completed within the period specified, the "I" is dropped and the numerical grade becomes the final grade.

Examinations and Quizzes

Undergraduate business courses, other than tutorial and seminar courses, have final examinations unless otherwise authorized by the OSB Undergraduate Student Academic Affairs and Curriculum Committee. In all courses in which final examinations are given, a student would not receive a passing grade without taking a final examination. Even though final examinations are not required in tutorial and seminar courses, the instructor may choose to give a final examination.

- A student who misses a major quiz or a midterm exam or the final exam without a valid reason will receive a grade of zero. No make-up is allowed.
- No shift in weight to the final exam is allowed.
- The midterm exam policy should be stated clearly in the syllabus of the course.
- No extra sessions will be given during the reading period.
- No final exams will be held during or before the reading period.
- Students should be informed that any form of solicitation of grades will be subject to disciplinary action.

In order to receive permission for a make-up, and only for serious medical reasons, the student must provide to the instructor, within 72 hours of the missed quiz or exam, an approved medical report signed by an ER or a University Health Services (UHS) doctor at AUB Medical Center (AUBMC), and/or qualified professional opinions issued by an AUB employee for further consideration. If the make-up quiz or midterm exam is approved, then the student will sit for the make-up on any of the following three days: the last day of term classes or the first two days of the reading period as decided by the director of the undergraduate program. Should the student appeal the instructor's decision, the matter should be referred to the OSB's Student Affairs Committee.

Cross-Registration

A business student who wants to register for a course at another recognized institution must meet all requirements for cross-registration as stipulated in the General University Academic Information section of this catalogue.

Study Abroad and Exchange Program

A business student who has started her/his undergraduate program at AUB and who wishes to study abroad must seek prior approval from the OSB Undergraduate Student Academic Affairs and Curriculum Committee if the student wishes to spend up to one year and earn up to 30 credits at another university. However, the student must spend her/ his last term at AUB. The student must achieve an average grade of "B" in all the courses (business or non-business) for which transfer credit may be granted. Courses with a grade less than "C" will not be transferred. Courses with online or hybrid method of delivery will not be transferred. A business student wishing to study abroad through an exchange program (mainly AACSB accredited schools) approved by the Office of International Programs, is allowed to transfer two core and two concentration business courses provided s/he receives an average grade of "B" in all the courses with a minimum grade equivalent to a "C+" in any of the courses. A non-business student, who is working towards a minor in business and wishing to study abroad through an exchange program approved by the Office of International Programs, is allowed to transfer one of the six courses that are required for a minor in business.

Graduation Requirements

Graduation requirements for the Bachelor of Business Administration (BBA) are as follows:

- A minimum of six terms beginning with the sophomore class is required.
- A maximum of six calendar years is allowed for the graduation of students who begin with the sophomore class, four calendar years for juniors and two calendar years for seniors. A student who fails to complete her/his degree program within these specified times must petition the OSB Undergraduate Student Academic Affairs and Curriculum Committee for an extension.
- A student transferring to AUB from another recognized institution of higher learning must register in the final three regular terms and complete at least 45 credits at AUB, of which a minimum of 24 credits must be in business before s/he is allowed to graduate with a BBA. For the purpose of this requirement, two summer sessions shall be considered equivalent to one term.
- A transfer student from within AUB must meet the residency requirement before s/he graduates with a BBA degree. The residency requirement stipulates that a student must spend a minimum of one regular term (i.e. fall or spring) and one summer session in the school, during which he/she must complete a minimum of 24 credits, 12 of which are business credits. During this period, the student must meet all minimum academic standards set forth by the school.
- Sophomore students should complete a minimum of 90 credits. With the approval of the OSB Undergraduate Student Academic Affairs and Curriculum Committee, tracks may establish programs that exceed these minimum credit requirements.
- Students should complete 51 credits in business courses comprising 36 credits of core courses and 15 credits of business electives in a concentration area. Students must achieve a cumulative GPA of at least 2.3 in these 51 credits and GPA of 2.3 on the 36 credits of core courses.
- For students to graduate with a concentration, the 15 credits in the concentration area must be completed with a cumulative GPA of at least 2.3. Normally a maximum of two courses completed outside OSB may count toward the concentration.
- Students must complete two required 0-credit business workshops: Business Communication Skills workshop and one Technical Skills workshop in the student's chosen concentration. Students may enroll in one optional Critical Thinking Skills workshop.
- Students must successfully complete the Assurance of Learning Requirements.
- When a student repeats a course, the highest grade obtained in the course is used in computing the student's average for graduation purposes. The student may repeat any course.
- Students must have grades of C+ or more in at least 50 credits numbered 200 or above.
- All students entering at sophomore, junior or senior level must satisfy the Arabic Language requirements by taking one Arabic course.
- All business students must take Understanding Communication - English courses as

determined by placement upon matriculation. These required courses may be taken immediately upon matriculation and must be continued without interruption until completed.

- For example, a student entering at the lowest level may take four terms of English (Intensive ENGL 100A or 100B, if required, and/or 102, 203 and 204); a student entering at the third level must take two terms (203 and 204; i.e., six credits). If ENGL 203 was taken during Freshman year, students must substitute it with any 3-cr elective.
- All business students must take MATH 203, MATH 204 and CMPS 208. A student who is exempted from MATH 203 must take, in addition to MATH 204 and CMPS 208, any other free elective course offered at AUB faculties. If MATH 203 or MATH 101 was taken during Freshman year, students must substitute it with any 3-cr elective.
- All business students must take ECON 211 and ECON 212.
- As per the university General Education requirement, all business students must take three courses (9 credits) from the General Education Cultures and Histories courses. Of those, 3 credits should be in the History of Ideas and 3 credits should hold both “Cultures and Histories” AND “Social Inequalities” attributes. In addition, students are required to take BUSS 215, which is designated as a Human Values course for the General Education requirement. Students must also take a course (3 credits) in Community Engaged Learning.
- All business students must take one course (3 credits) from Understanding the World from the General Education Program.
- Students must complete ACCT 210, FINA 210, INFO 200, MNGT 215 and MKTG 210 as prerequisites to BUSS 245.
- All business students must take 1 free business elective course from OSB offerings. A student pursuing a minor at any other AUB faculty or a dual degree may use this free business elective to take a non-business course towards fulfilling the minor or dual degree requirements.
- All Business students must satisfy the General Education requirements as specified for all AUB students.
- Students already holding a bachelor’s degree outside business and wishing to obtain a BBA must complete 51 business credit hours after admission. However, students who have completed a minor in business or who have taken 18 or more business credit hours prior to applying for the BBA as a second degree must take no fewer than 33 business credit hours. All second-degree students must also fulfill other non-business graduation requirements.

Program Outline

The undergraduate program, leading to a BBA degree, requires students to complete 120 credit hours for those beginning at the freshman level and 90 credit hours for those joining the university as sophomores. Of the total required credit hours, the BBA program requires 51 credit hours, including a 1-credit internship program, to be satisfactorily completed in business courses, with the remainder allocated to liberal arts/non-business courses. In addition, and as a condition for graduation, all students are required to successfully complete two 0-credit pass/fail workshops designed to enhance their business communication skills and technical

skills within the business concentration. Students have the option to enroll in an additional 0-credit workshop designed to enhance their critical thinking skills.

Assurance of Learning Requirements

To comply with AACSB Assurance of Learning guidelines and standards, all students are required, as a condition for graduation, to successfully complete work assigned by the school for this purpose during their last term.

Business Requirements

Of the total required credit hours, 51 must be satisfactorily completed in business courses. Of these 51, a general business core comprising 33 credit hours is common to all business students, and one free 3-credit business elective. In addition to this general business core (which includes the two 0-credit workshops mentioned above), the student must complete 15 additional credit hours of business electives in one of the following concentration areas which include Accounting, Finance, General Business, Marketing, Entrepreneurship and Innovation, Management and Organization, Information Systems, and Operations Management. Students selecting the Finance concentration have the option to specialize in Corporate Finance or Investment Management. All courses qualifying as business electives must be offered by OSB.

The student must declare concentration(s) no later than the end of the junior year. A BBA student is allowed to graduate with a maximum of two concentrations by completing 15 credits in the first concentration, 12 credits in the second concentration and one technical skills workshop in each concentration; however, the free business elective course can be counted towards the second concentration provided that the free business elective course is listed in the second concentration courses.

Required Core Business Courses (36 credits)

Code	Course Title	Credits
ACCT 210	Financial Accounting	3
ACCT 215	Management Accounting	3
BUSS 200	Business Data Analysis	3
BUSS 211	Business Law	2
BUSS 215	Business Ethics	3
BUSS 239	Business Communication Skills Workshop	0
BUSS 245	Internship/Practicum	1
BUSS 249	Strategic Management	3
DCSN 200	Operations Management	3
FINA 210	Business Finance	3
INFO 200	Foundations of Information Systems	3
MNGT 215	Fundamentals of Management and Organizational Behavior	3
MKTG 210	Principles of Marketing	3

Free Business Elective	Any business elective course	3
Total Business Credit Hours		36

Note:

- Students will neither receive credits for ECON 213, EDUC 219, EDUC 227, STAT 201, ENGM 500, AGSC212, nor waive any of the business courses of similar nature.
- STAT 210 is considered as equivalent to BUSS 200 for students who completed STAT 210 with a minimum grade of B- prior to transferring to business.
- Business students may not take STAT 210 and receive credits for it.

General Education Requirements

Starting at the sophomore level, of the required 90 credit hours of the BBA program, 39 credit hours must be satisfactorily completed in general education courses. These include 6 credit hours of English, 6 credit hours of Economics (Societies and Individuals), 9 credit hours of Cultures and Histories including 3 credits from the History of Ideas and 3 credits that hold both "Cultures and Histories" and "Social Inequalities" attributes, 6 credit hours of Mathematics (quantitative reasoning), 3 credit hours of Computer Science (quantitative reasoning), 3 credit hours of Arabic, 3 credit hours of Understanding the World, and 3 credits of Community Engaged Learning. For a list of specific required general education courses, refer to the next section.

Students who took required general education courses in their freshman year are exempted from them in the sophomore year. These students, as well as sophomore students who are exempted from specific general education course(s), must take additional free electives to fulfill the minimum of 39 credit hours of general education courses required for graduation. These free electives may be taken in business or non-business courses.

Program Outline Important Notes:

It is important to note the following:

- Holders of the Literature & Humanities or the Sociology & Economics BACC II must take MATH 203 and MATH 204. Holders of the General Sciences or Life Sciences BACC II must take only MATH 204 and an additional free elective to substitute for MATH 203 as per the minimum credit hour requirement for degree completion.
- French Baccalaureate holders who did not take math in grade 12 (Terminale) must take MATH 203 and MATH 204. French Baccalaureate holders who completed mathématiques expertes or spécialité mathématiques or mathématiques complémentaires in grade 12 (Terminale) must take only MATH 204 and an additional free elective to substitute for MATH 203 as per the minimum credit hour requirement for degree completion.
- International Baccalaureate Diploma holders who completed math at the Standard Level (SL) or at the Higher Level (HL) must take only MATH 204 and an additional free elective to substitute for MATH 203 as per the minimum credit hour requirement for degree completion.

- IGCSE Diploma holders who completed math at the Ordinary Level (O-Level) must take MATH 203 and MATH 204. IGCSE Diploma holders who completed math at the Advanced Level (A-Level) must take only MATH 204 and an additional free elective to substitute for MATH 203.
- In order to complete the Humanities requirement, students must complete 9 credit hours of Cultures and Histories courses. In addition, 3 credits must be completed from Human Values (BUSS 215). Please refer to the General Education section of this catalogue for more detail.
- Understanding the World courses must be chosen as per the university General Education guidelines (please refer to the General Education section of this catalogue).
- The Business Communication Skills workshop, the Technical Skills workshop and the Critical Thinking Skills workshop are graded on a P/F basis.
- ECON 213, EDUC 219, EDUC 227, ENMG 500, AGSC 212, STAT 201, STAT 210, as well as any other course that significantly overlaps with OSB core courses cannot be given equivalence to OSB required courses. These courses cannot be counted for credit as business or non-business free electives.
- Courses that may significantly overlap with business elective courses, such as SOAN 231, SOAN 234, SOAN 235 and SOAN 243, may be taken as free electives. However, students will not receive credit for any of these courses if they have taken the respective equivalent business elective.
- Students who are exempted from any required courses such as MATH 203 have to meet the 90 credit-hour graduation requirement by taking additional free electives.

Program Delivery

The following is a proposed study plan for the BBA program with a General Business concentration:

Required concentration courses:

- Any combination of 5 concentration courses

Required Technical Skills Workshop:

- ACCT 253, DCSN 253, INFO, 253, ENTM 253, FINA 253, MNGT 253 or MKTG 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
Technical Skills Workshop (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
Business Elective	3
Technical Skills Workshop (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	**Credits**
Business Elective	3
Business Elective	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 – Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
Business Elective	3
Business Elective	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with an Accounting concentration:

Required concentration courses:

- ACCT 221
- ACCT 223
- 3 other ACCT concentration courses

Required Technical Skills Workshop: ACCT 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
ACCT 215	3
ACCT 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
INFO 200	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
ACCT 221	3
ACCT 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	**Credits**
ACCT 223	3
ACCT Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
ACCT Concentration	3
ACCT Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with an Entrepreneurship and Innovation concentration:

Required concentration courses:

- ENTM 220
- ENTM 221
- 2 other ENTM concentration course
- 1 other ENTM or MNGT or MKTG concentration course

Required Technical Skills Workshop: ENTM 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
ENTM 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
ENTM 220 or ENTM 221	3
ENTM 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	Credits
ENTM 220 or ENTM 221	3
ENTM Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
ENTM Concentration	3
ENTM or MNGT or MKTG Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with a Finance concentration:

Required concentration courses:

- FINA 220
- FINA 222
- 3 other FINA concentration courses

Required Technical Skills Workshop: FINA 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
FINA 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
FINA 220 or FINA 222	3
FINA 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	**Credits**
FINA 222 or FINA 220	3
FINA Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
FINA Concentration	3
FINA Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (take in 5th or 6th term)	0

The following is a proposed study plan for the BBA program with a Finance concentration – Corporate Finance emphasis:

Required concentration courses:

- FINA 220
- FINA 222
- FINA 246
- 2 other FINA concentration courses to be chosen from the following list: FINA 231, FINA 236, FINA 240, FINA 248, FINA 249.

Required Technical Skills Workshop: FINA 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
FINA 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
FINA 220 or FINA 222	3
FINA 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	**Credits**
FINA 222 or FINA 220	3
FINA 240, FINA 231, FINA 236, FINA 248, or FINA 249	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
FINA 246	3
FINA 240, FINA 231, FINA 236, FINA 248, or FINA 249	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

The following is a proposed study plan for the BBA program with a Finance concentration – Investment Management emphasis:

Required concentration courses:

- FINA 220
- FINA 222
- FINA 240
- 2 other FINA concentration courses to be chosen from the following list: FINA 221, FINA 230, FINA 244, FINA 245.

Required Technical Skills Workshop: FINA 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
FINA 253(taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
FINA 220 or FINA 222	3
FINA 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	Credits
FINA 222 or FINA 220	3
FINA 221, FINA 230, FINA 244, or FINA 245	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
FINA 240	3
FINA 221, FINA 230, FINA 244, or FINA 245	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with Information Systems concentration:

Required concentration courses:

- DCSN 205
- INFO 225 or INFO 226 (at least one of them should be taken)
- 2 INFO concentration courses
- 1 INFO or DCSN concentration course

Required Technical Skills Workshop: INFO 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
INFO 253(taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
INFO 225 or INFO 226	3
INFO 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	**Credits**
DCSN 205	3
INFO Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
INFO Concentration	3
INFO or DCSN Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with Management and Organization concentration:

Required concentration courses:

- Option 1:
  - 2 required concentration courses: MNGT 224 and MNGT 227
  - 3 other MNGT concentration courses
- Option 2:
  - 2 required concentration courses: MNGT 224 and MNGT 227
  - 2 other MNGT concentration courses
  - 1 AUB course from: PSYC 212, PSYC 216, PSYC 220, PSPA 212, PSPA 259

Required Technical Skills Workshop: MNGT 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
MNGT 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
MNGT 224 or MNGT 227	3
MNGT 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	Credits
MNGT 224 or MNGT 227	3
MNGT Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
MNGT Concentration	3
MNGT Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with a Marketing concentration:

Required concentration courses

- Option 1:
  - 5 MKTG concentration courses (including MKTG 240)
- Option 2:
  - 4 MKTG concentration courses (including MKTG 240) and 1 AUB course from: MCOM 202, MCOM 218, SOAN 225, SOAN 237

Required Technical Skills Workshop: MKTG 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
MKTG 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
MKTG 240	3
MKTG 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	Credits
MKTG Concentration	3
MKTG Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
MKTG Concentration	3
MKTG Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Program Delivery

The following is a proposed study plan for the BBA program with Operations Management concentration:

Required concentration courses:

- DCSN 205
- INFO 225 or INFO 226 (at least one of them should be taken)
- 2 DCSN concentration courses
- 1 DCSN or INFO concentration course

Required Technical Skills Workshop: DCSN 253

Year I

Freshman Year Total Credit Hours 30. Refer to the Admissions section of this catalogue.

Year II

Semester 1	**Credits**
ACCT 210	3
ENGL 203	3
MATH 203	3
ECON 211 or ECON 212	3
CMPS 208	3
Semester 2	**Credits**
FINA 210	3
ENGL 204	3
MATH 204	3
DCSN 200	3
MNGT 215	3
BUSS 239	0

Year III

Semester 3	**Credits**
ECON 212 or ECON 211	3
BUSS 200	3
ARAB	3
MKTG 210	3
INFO 200	3
DCSN 253 (taken in 3rd or 4th term)	0
Semester 4	**Credits**
ACCT 215	3
BUSS 215 (Human Values)	3
Elective Community Engaged Learning	3
Elective Cultures and Histories (History of Ideas)	3
DCSN 205	3
DCSN 253 (taken in 3rd or 4th term)	0
Summer	**Credits**
Internship Practicum: BUSS 245	1

Year IV

Semester 5	Credits
INFO 225 or INFO 226	3
DCSN Concentration	3
Free Business Elective	3
Elective Cultures and Histories AND Social Inequalities	3
BUSS 211	2
BUSS 253 - Optional (taken in 5th or 6th term)	0
Semester 6	**Credits**
DCSN Concentration	3
DCSN or INFO Concentration	3
BUSS 249	3
Elective Understanding the World	3
Elective Cultures and Histories	3
BUSS 253 - Optional (taken in 5th or 6th term)	0

Undergraduate Business Courses

Undergraduate Business Course Prefixes

BBA courses all have a prefix labeled after the following discipline names, ACCT (Accounting), DCSN (Business Decision Systems), ENTM (Entrepreneurship), FINA (Finance), INFO (Information Systems), MKTG (Marketing) and MNGT (Management). A detailed description of courses under each discipline is available in its respective track section. Interdisciplinary and integrative courses that do not belong to a particular discipline are labeled by the prefix BUSS.

BUSS Courses

BUSS 101 Introduction to Business 3 cr.
This course introduces students to the many facets of private enterprise systems and the businesses that operate within its framework. Moreover, it focuses on an overview of the forces within the business environment, i.e., globalization, economics, government, and society. Students use this course to learn more about the business landscape, by focusing on business systems and key functional areas within the firm, such as marketing, operations, accounting, finance, management, and human resources. Freshman standing only.

BUSS 200 Business Statistics 3 cr.
Introduces the basic statistical methods that are commonly used for managerial decision-making. Emphasis is on applying methods and interpreting results, with extensive use of statistical software. The course first reviews the descriptive statistics and basic concepts of probability distributions, in particular the normal distribution. The course also addresses topics on inferential statistics such as confidence intervals, hypothesis testing, one-way analysis of variance and correlation analysis. The course finally covers simple linear

regression and introduces students to multiple linear regression and time series forecasting. Business majors only. Prerequisites: MATH 204 and CMPS 208.

BUSS 211 Business Law 2 cr.
The main objective of the course is to help business students understand the Lebanese and American legal aspects of common business activities and the formation and function of commercial companies, along with the related ethical principles. Junior or senior standing business majors only.

BUSS 215 Business Ethics 3 cr.
This is an introductory course that provides students with an overview of business ethics at the individual, organizational, and societal levels. Issues such as corruption, sexual harassment, fair trade, fraud, whistleblowing, corporate social responsibility, ethical norms, ethical values, environmental responsibility, and many more will be examined both in the international and local Lebanese context. Ultimately, the course is designed to not only introduce students to a wide array of current ethical issues in business but to also foster skills related to critically analyzing the ethical and social dimensions of business-related problems in order to build more ethically informed rationales for decision-making. General Education/Human Values course. Junior or senior standing.

BUSS 220 Personal Financial Planning 3 cr.
Every financial decision we make has an impact on our lives and our future. This course will engage a diverse student population by helping them make personal connections to financial concepts that can immediately impact their current financial situations, avoid basic financial mistakes, and provide a strong foundational knowledge of financial concepts and tools that they need to manage their day-to-day finances and plan their future. This course empowers students to define their personal financial objectives and make smart financial decisions that help them achieve their goals. It offers essential skills and knowledge that will set students on the road to lifelong financial wellness. General Education/Societies and Individuals. For non-business students only.

BUSS 224 Business & Sustainability 3 cr.
Setting the foundation for understanding sustainability in the business context, this course takes students on a comprehensive journey through the principles of sustainable business practices. It emphasizes the importance of integrating sustainability into the core strategy of companies to achieve the triple bottom line. With a blend of historical insights, theoretical frameworks, and contemporary case studies, the course explores how businesses across various sectors are leading the charge in sustainable innovation. Students will critically examine the roles and responsibilities of businesses in promoting environmental conservation, social equity, and economic prosperity.

BUSS 230 Managerial Economics 3 cr.
Managerial Economics is the use of economic theory and mathematical and statistical techniques in order to examine how a firm can make economic decisions given the constraints it faces. Topics covered include: goals of the firm, marginal analysis, demand theory and estimation, time series and forecasting, theory of production and estimation, cost theory and estimation, pricing and output determination under different market structures, game theory, and pricing in practice. Business majors only. Prerequisites: ECON 211 and BUSS 200.

BUSS 235 Macro Business Analysis 3 cr.
A course that combines theory with cases that require group work and discussions. The theoretical part of this course covers monetary, fiscal and exchange rate policy, and an overview of economic development strategies. Cases are used to train students in

developing rigorous arguments to analyze interactions between firms in domestic as well as global economic scenarios. Business majors only. Prerequisite: ECON 212.

BUSS 239 Business Communication Skills Workshop 0 cr.
A twelve-hour workshop designed to introduce students to the various communication skills needed in a typical work environment. Mastering these skills plays a profound role in shaping and advancing professional careers in all types of industries and work scopes. The workshop introduces specific guidelines for the effective use of a variety of communication skills in the workplace in an interactive manner that simulates the work environment. Business majors only.

BUSS 245 Internship/Practicum 1 cr.
A summer period of guided work experience under faculty supervision by a mentor and corporate guidance by a preceptor, designed to acquaint students with the world of work and help them acquire core values and basic skills necessary for an understanding of the global economy. Business majors only. Prerequisites: FINA 210, MNGT 215, MKTG 210, INFO 200. Business majors only. Junior or senior standing.

BUSS 246 Honors Seminar in Business 3 cr.
A tutorial research course that can be counted toward any undergraduate concentration. This course involves directed readings and emphasizes individual, original and independent research in any business-related area. This course requires, among other things, the student to prepare an honors research paper under the supervision of one or more faculty members in the particular area of concentration. The honors paper is normally presented at a school seminar. Prerequisite: Approval of track convener.

BUSS 247 Project 3 cr.
A practicum course that can be counted for any undergraduate concentration. This course focuses on analysis of contemporary business issues and problems. The project requires, among other things, the student to work on a problem faced by one of the local or regional businesses, and recommends a set of possible solutions under the supervision of one or more faculty members in the particular area of concentration. The results of the project are normally presented in a meeting in the presence of representatives from the business subject to the consulting assignment. Business majors only. Prerequisite: Approval of course instructor.

BUSS 249 Strategic Management 3 cr.
Strategic Management is the capstone business course. It covers the three pillars of the strategic management process: analysis, formulation, and implementation of strategies. It helps students acquire the skills needed to conduct comprehensive internal and external analyses to identify the strengths and weaknesses of an organization, as well as the opportunities and threats in its external environment. In other words, students will learn how to assess the resources, capabilities, and core competencies of an organization, understand the parameters of the industry in which it operates, and accordingly capitalize on opportunities in its macroenvironment to achieve a sustainable competitive advantage. Moreover, the course covers the formulation of Corporate, Business, and Functional level strategies, and what it takes to implement these strategies successfully. Multiple case studies covering various industries will help students bridge the gap between the theoretical frameworks and the application of these frameworks in real life business situations. Business majors only. Prerequisites: ACCT 215, FINA 210, MNGT 215, MKTG 210, INFO 200 and DCSN 200.

BUSS 253 Critical Thinking Skills Development Workshop 0 cr.
A twelve-hour workshop designed to equip business students with the critical thinking skills

necessary to navigate the complexities of the business world. Through a combination of hands-on activities and real-world case studies, participants will learn to analyze problems, evaluate solutions, and make decisions with clarity and confidence. Emphasizing practical applications and collaborative learning, this workshop aims to foster a mindset of inquiry and analysis. Business majors only. Senior Standing. Prerequisites: ACCT 215, BUSS 200, FINA 210, MNGT 215, MKTG 210, INFO 200, DCSN 200 and Instructor's approval.

BUSS 255 CO-OP Education 3 cr.
A 6-month work experience integrated to the BBA curriculum that includes a systematic approach for filling pre-professional work assignments, mentored by an OSB faculty and supervised by a corporate preceptor. The course is designed to provide students with practical experience and help them develop an understanding of core business values as well as acquire practical skills necessary to excel in today's dynamic and challenging business environment. Business majors only. Prerequisites: ACCT 210, CMPS 208, ECON 211, ECON 212, and four courses of the following: FINA 210, MKTG 210, MNGT 215, DCSN 200, INFO 200, BUSS 200.

BUSS 256 Advanced CO-OP Education 3 cr.
A 6-month work experience integrated to the BBA curriculum that includes a systematic approach for filling pre-professional work assignments, mentored by an OSB faculty and supervised by a corporate preceptor. The course is designed to provide students with advanced practical experience and help them develop deeper understanding of core business values as well as enhance their acquired practical skills necessary to excel in today's dynamic and challenging business environment. Business majors only. Prerequisites: BUSS 255, and all of the following courses FINA 210, MKTG 210, MNGT 215, DCSN 200, INFO 200, BUSS 200.

FAME Track Courses

In addition to the 39 credit general undergraduate requirement from outside the school (listed earlier) and the 36 credits required in the business core (ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 239, BUSS 245, BUSS 249, DCSN 200, FINA 210, INFO 200, MKTG 210, MNGT 215 and a free Business elective), the track requires students following one of its concentrations to take 15 credits in the concentration area (including the required concentration courses in each area) and a technical skills workshop in the concentration area. Students may choose to pursue a concentration in Accounting, Finance, Finance with Corporate Finance emphasis, or Finance with Investment Management emphasis as described in the corresponding degree plan for that concentration.

Accounting Courses

ACCT 210 Financial Accounting 3 cr.
An introduction to financial accounting that covers the use, interpretation and analysis of the principal financial statements and other sources of financial information from a national and international perspective.

ACCT 215 Management Accounting 3 cr.
A course that covers the use, interpretation and analysis of management accounting information for management decision-making, planning and control of operations. The focus is on cost behavior, cost measurement, budgeting, performance measurement and evaluation, responsibility accounting and product costing. Business majors only. Prerequisite: ACCT 210.

ACCT 217 Strategic Managerial Accounting 3 cr.
In-depth coverage of topics such as value chain analysis, activity-based costing, JIT systems, analysis of firm's cost structures, and the provision and use of information for strategic decisions. A rigorous analysis of some widely-used financial and non-financial measures, such as Return on Investment, EVA and the balanced scorecard is also undertaken. Business majors only. Prerequisite: ACCT 215.

ACCT 221 Intermediate Financial Accounting I 3 cr.
This course develops an in-depth understanding of the theory of accounting, traditional financial accounting topics, conceptual framework, major financial statements form and content, accounting systems, and valuation. It also covers recent developments in financial reporting and measurement practices as promulgated by the leading professional accounting organizations and applied by practitioners in public accounting and industry. Business majors only. (Offered in fall semester only). Prerequisite: ACCT 210.

ACCT 222 Cost Accounting 3 cr.
A course on accounting in manufacturing operations; cost concepts and classifications; cost accounting cycle; accounting for materials, labor and burden; process cost accounting; budgeting; standard costs; cost reports; direct costing and differential cost analysis; cost-volume-profit analysis and gross profit analysis. Business majors only. Prerequisite: ACCT 215.

ACCT 223 Intermediate Financial Accounting II 3 cr.
Continuation of ACCT 221. This course covers financial reporting issues relating to liabilities, ownership equity, selected financial reporting issues and financial reporting disclosure. Business majors only. (Offered in spring semester only). Prerequisite: ACCT 221.

ACCT 230 Introduction to External Auditing 3 cr.
An introduction to auditing and the professional responsibilities of a career in accounting. Topics include the legal and ethical responsibilities of accountants; professional auditing standards; international auditing standards; acquisition, evaluation and documentation of audit evidence; reports on the results of the engagement, evaluation in internal control, compliance testing, substantive testing, and statistical sampling and auditing EDP. Business majors only. Junior Standing. Co-requisite: ACCT 221.

ACCT 231 Fraud Examination and Internal Audit 3 cr.
A course on fraud examination and internal audit. This course covers concepts and topics of fraud detection, deterrence and prevention; types of financial statement and occupational fraud; and investigation and interviewing techniques. It also covers functions of internal audit, audit committees and corporate governance, planning and performing the internal auditing engagement, and coordination of internal auditing and external auditing. Business majors only. Prerequisite: ACCT 215.

ACCT 232/INFO 232 Accounting Information Systems 3 cr.
A course that explores in detail several typical Accounting Information System (AIS) application subsystems, such as order entry/sales, billing/receivables/cash receipts, inventory, purchasing/accounts payable/cash disbursements, payroll and materials planning/production. This course includes understanding, documenting, designing, using and auditing these application subsystems. Business majors only. Prerequisites: ACCT 210 and INFO 200. Students cannot receive credit for both ACCT 232 and INFO 232.

ACCT 235 Taxation 3 cr.
A study of the Lebanese Tax Code and its application as it relates to individuals and

various tax entities. The course provides an introduction to tax planning according to tax regulations and legislation. It also gives an overview of the US tax system as well as various international tax developments (multilateral tax agreements, BEPS, CRS, E-services taxation, etc.). Business majors only. Prerequisite: ACCT 210.

ACCT 240 Fund Accounting 3 cr.
A course that provides an alternative perspective of accounting that meets the needs of not-for-profit and governmental organizations. This course involves the interpretation and use of fund accounting as a means of reporting and controlling activities. Business majors only. Prerequisite: ACCT 215.

ACCT 241 Profit Planning and Budgeting Control 3 cr.
A broad view of profit planning and control. Topics covered include sales planning and control, planning production, materials purchase and usage, planning and controlling direct labor costs and overhead, planning expenses, planning and controlling capital expenditures, and completion and application of the profit plan. Business majors only. Prerequisite: ACCT 215.

ACCT 246 International Accounting 3 cr.
This course covers accounting and auditing related issues from both international and US perspectives. It provides a comparative coverage of accounting and auditing topics under both sets of standards. Business majors only. Prerequisite: ACCT 215.

ACCT 248/FINA 248 Financial Statement Analysis 3cr.
A course that covers the relevance and process of accounting and financial analyses within the broader theme of business analysis. The focus is on informational role of accounting, the quality of reporting, the analysis of financing, investing, and operating activities, as well as of different aspects of an entity's financial performance and financial position – all towards the ultimate purpose of informed decision-making. Business majors only. Prerequisite: ACCT 210. Student cannot receive credit for both ACCT 248 and FINA 248

ACCT 250 Special Topics 1, 2 or 3 cr.
A course that deals with special issues and concerns in accounting not included in regular courses. This course may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Business majors only. Prerequisite: Approval of track convener.

ACCT 251 Accounting Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Business majors only. Prerequisite: Approval of track convener.

ACCT 253 Technical Skills Workshop in Accounting 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how to leverage specific tools, technologies, or methodologies in the field of accounting. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career. Accounting concentration only. Junior Standing.

Finance Courses

FINA 210 Business Finance 3 cr.
This course teaches the tools that determine and analyze the major decisions a financial

manager has to make, including identification of the firm's goals, time value of money, use of discount cash flow models, capital budgeting under certainty, capital structure as it relates to cost of capital, dividend policy and ethics in finance. Engineering students must only register in FINA 211 instead of FINA 210. Prerequisite: ACCT 210.

FINA 211 Introduction to Finance for Engineers 3 cr.
This course introduces basic principles of finance to engineers and provides practical tools for financial decisions and valuation in a corporate context, including financial statement analysis, valuation, capital budgeting under uncertainty, cost of capital, capital structure, dividend policy, lease finance, options, and acquisition. Engineering majors only. Prerequisite: ACCT 210.

FINA 215 Financial Markets and Institutions 3 cr.
This course provides students with a broad understanding of the functioning of financial markets and explores the determinants of interest rates and their impact on asset pricing. The course also explores the roles and functions of financial institutions and intermediaries such as commercial banks, investment banks, mutual funds, pension funds and insurance companies; additionally, the course briefly tackles the types of risks each of these institutions face. Business majors only. Prerequisite: FINA 210.

FINA 218 Risk Management in Financial Institutions 3 cr.
This course focuses on managing risk in the context of the Basel accords. Emphasis is placed on the identification, measurement and management of risk at financial institutions. An overview of the Basel Accords is provided along with computations of capital requirements taking into consideration market, credit and operational risk. Basic quantitative, legal and accounting tools are used. Business majors only. Prerequisite: FINA 210.

FINA 220 Investment Management 3 cr.
A study of the operations of securities markets, investment policies, valuation of individual securities and techniques of investing in securities. This course also introduces students to analysis of investment information, evaluation of risks and returns, and principles of portfolio selection in investment decisions. Business majors only. Prerequisite: FINA 210.

FINA 221 Fixed Income Securities 3 cr.
The course's primary objective is to equip students with the knowledge and skills to navigate the complexities of fixed-income markets. Students will develop theoretical and practical skills to analyze fixed-income instruments across various market conditions by examining real-world case studies and engaging in hands-on exercises. Therefore, throughout the course, students will delve into the investment spectrum of fixed-income securities, including treasury and corporate bonds, mortgage-backed securities, asset-backed securities, floating and variable rate bonds, and other bond instruments. Emphasis will be placed on mastering the analytical techniques for evaluating these securities, including yield curve analysis, duration, convexity measurements, bond rating assessment, and pricing models. Business majors only. Prerequisite: FINA 210.

FINA 222 Valuation Methods 3 cr.
This course covers techniques used by investment bankers and analysts for enterprise valuation. The techniques used are divided into intrinsic valuation and relative valuation. Intrinsic valuation includes dividend discount models, free cash flow to equity, free cash flow to firm. Relative valuation measures are price-to-earnings, price-to-sales, price-to-book, and price-to-cash flow. Business majors only. Prerequisite: FINA 210.

FINA 225 Commercial Bank Management 3 cr.
Defines functions, operations and objectives of commercial banks as compared to other financial institutions. The course studies the management aspects of commercial banks, financial analysis of bank statements, liquidity management, assets and liability management, profitability, capital adequacy, credit analysis, trade finance and banking regulations. Business majors only. Prerequisite: FINA 210.

FINA 227 Insurance 3 cr.
An operational approach to risk management in business and personal affairs. The major thrust of this course is to introduce students to the various types of insurance contracts including life, health, property and liability insurance, and how to measure and manage risk. This course also covers reinsurance and the know-how to make the best use of insurance contracts and coverage. Business majors only. Prerequisite: FINA 210.

FINA 228 Risk Management 3 cr.
This course provides an introduction to the risks faced by financial and nonfinancial institutions. These risks include interest rate, liquidity, operational, market and credit risk. Students will acquire a thorough understanding of the measures of market and credit risk such as Value at Risk (VaR), Expected Shortfall (ES), default probabilities and credit VaR. The course also introduces stress testing, scenario analysis as well as the use of derivatives to hedge risk. Business majors only. Prerequisites: FINA 210 and senior standing.

FINA 230 International Financial Management 3 cr.
An analysis of the opportunities, problems, and financial decisions confronting multinational companies. The focus of this course is on understanding international regulatory and environment differences, access to money and capital markets, use of derivatives to hedge exchange rate risk, exposure to political risk and other types of risk, and international diversification. Business majors only. Prerequisite: FINA 210.

FINA 231 Private Equity 3 cr.
The course provides students with a practical understanding of the private equity industry. Private equity is the study of investing capital in the equity of private companies to fund growth as well as investing in public companies to take them private. The course explores how modern private equity firms raise capital, align interests, conduct due diligence, secure leverage, negotiate deals, execute an investment plan and exit through an Initial Public Offering or a Merger and Acquisition. The course places particular emphasis on the conduct of private equity in the MENA region and emerging markets. Business majors only. Prerequisite: FINA 210

FINA 232/ENTM 232 Real Estate Management 3 cr.
This course is designed to give the student a general overview of the real estate space. Topics include an introduction to real estate markets (sources of demand), real estate finance, project evaluation, elements of real estate law, appraisals, property development and property management. Business majors only. Prerequisite: FINA 210. Students cannot receive credit for both ENTM 232 and FINA 232.

FINA 234 Real Estate Finance and Investment 3 cr.
This course examines selected issues in real estate finance and investment: Techniques for analyzing financial decisions in property development and investment; property income streams, pro forma analysis, equity valuation, taxes, risk types, and sensitivity analysis. It also introduces the fundamentals of mortgage securitization and public markets in real estate securities. Business majors only. Prerequisite: FINA 210.

FINA 235 Financial Planning 3 cr.
A course that deals with planning and managing personal finance. This course focuses on topics such as the financial planner's role and environment, cash flow budgeting, consumer credit, debt management, insurance, taxation and financial planning, retirement planning, estate planning and wills, personal bankruptcy and insolvency, and preparation of financial plans. Business majors only. Prerequisite: FINA 210.

FINA 236/ENTM 236 Entrepreneurial Finance 3 cr.
This course aims to take the student through the various stages of financing new venture deals, from inception to startup to harvest. The course teaches students how to identify new venture financing needs and corresponding financing sources. The course also examines new venture valuation techniques. From the investor's perspective, the course is designed to enable improved investment and financing decisions in entrepreneurial settings. From the viewpoint of the entrepreneur, it will examine financial planning and forecasting, the evaluation of alternative sources of financing, venture capital, and basic company valuation. Business majors only. Prerequisite: FINA 210. Students cannot receive credit for both ENTM 236 and FINA 236.

FINA 240/DCSN 220 Financial Modeling 3 cr.
This course is designed to provide students with the knowledge and skills needed to build, analyze, and interpret financial models. The course will cover essential financial concepts, Excel skills, and modeling techniques used in various industries. Students will gain hands-on experience in constructing financial models for decision-making and valuation purposes. The Financial Modeling course establishes a crucial bridge between foundational finance courses and advanced topics within the field. Building on the principles acquired in introductory finance and accounting courses, this specialized course delves into the practical application of financial concepts through the construction and analysis of sophisticated financial models. It complements accounting courses by providing students with a hands-on understanding of how financial statements and forecasting techniques are interwoven in real-world scenarios. Moreover, the course extends the quantitative skills developed in basic mathematics and statistics courses, honing them specifically for financial modeling purposes by introducing valuation techniques, scenario analysis, and the integration of Excel and VBA programming. Business majors only. Prerequisite: BUSS 200 and FINA 210. Students cannot receive credit for both DCSN 220 and FINA 240.

FINA 241/ENTM 241 Venture Capital Management 3 cr.
This course provides the students with conceptual and practical knowledge about key operating and strategic aspects of an entrepreneurial business start-up, from inception to IPO. It covers operating and strategic issues including the development of a business plan and new venture strategies, the impact of marketing methods on financial requirements, the assessment and staging of the financing needs of the venture, sources of finance, advantages and drawbacks, valuation methods, IPO prerequisites and constraints, organizational design, along with harvesting alternatives. Business majors only. Prerequisite: FINA 210. Students cannot receive credit for both ENTM 241 and FINA 241.

FINA 244 Derivative Securities 3 cr.
This course introduces the students to the functioning of derivatives markets and the pricing of derivatives contracts. The pricing of contingent claims such as forwards, futures, swaps, and options will be covered in detail. The course also examines how financial institutions use derivatives contracts to hedge risk. Business majors only. Prerequisites: FINA 210.

FINA 245 Hedge Fund Strategies 3cr.
This course focuses on the theory and practice of hedge fund management. The class describes some of the main strategies used by hedge funds. The course covers tactical asset allocation across asset classes such as commodities, equities, currencies and fixed income, individual equity investing (discretionary equity investing, short selling, quantitative equity strategies), global macro investing, managed futures strategies, and relative-value strategies (fixed income arbitrage, convertible bond arbitrage, event driven investments). Practical aspects that pertain to the implementation of trading strategies (transaction costs, liquidity risk and performance measurement) as well as "backtesting" a trading strategy are also discussed. Business majors only. Prerequisite: FINA 210

FINA 246 Corporate Finance 3 cr.
This course provides thorough understanding and analyses, using the case approach, of the financial policies and strategic financial decisions of corporations. The topics covered include project valuation using real options, cost of capital for a multidivisional firm, capital structure and estimation of debt benefits, distribution policy (Dividends and Buybacks), raising capital (IPOs and SEOs), warrants and convertibles, mergers and acquisitions, leverage buyouts, corporate failure and restructuring. Business majors only. Prerequisite: FINA 210.

FINA 248/ACCT 248 Financial Statement Analysis 3cr.
A course that covers the relevance and process of accounting and financial analyses within the broader theme of business analysis. The focus is on informational role of accounting, the quality of reporting, the analysis of financing, investing, and operating activities, as well as of different aspects of an entity's financial performance and financial position – all towards the ultimate purpose of informed decision-making. Business majors only. Prerequisite: ACCT 210. Students cannot receive credit for both FINA 248 and ACCT 248.

FINA 249 Introduction to Sustainable Finance 3 cr.
This course introduces students to the principles of sustainable finance from the perspective of investors and management. Students will learn to critically assess the role of financial markets in promoting sustainable development, effectively integrate environmental, social, and governance (ESG) criteria into financial analyses and decisions, and develop expertise in sustainable investment strategies and products. Topics covered include sustainability challenges, the externalities of firm behavior, the role of governance structures and institutional investors in steering towards sustainable business practices, ESG metrics and data, and the role of financial markets and instruments in the allocation of capital towards sustainable business activities. Students will understand how to align financial practices with the broader objectives of sustainable development. Prerequisite: FINA 210.

FINA 250 Special Topics 1, 2, or 3 cr.
A course that deals with special issues and concerns in finance not included in regular courses. This course may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Business majors only. Prerequisite: Approval of track convener.

FINA 251 Finance Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration when existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Business majors only. Prerequisite: Approval of track convener.

FINA 253 Technical Skills Workshop in Finance 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how to leverage specific tools, technologies, or methodologies in the field of finance. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career. Finance concentration only. Junior Standing.

Marketing, Management and Entrepreneurship Track Courses

In addition to the 39 credit general undergraduate requirement from outside the school (listed earlier) and the 36 credits required in the business core (ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 239, BUSS 245, BUSS 249, DCSN 200, FINA 210, INFO 200, MKTG 210, MNGT 215, and a free Business elective), the track requires students following one of its concentrations to take 15 credits in the concentration area (including the required concentration courses in each area) and a technical skills workshop in the concentration area. Students may choose to pursue a concentration in Marketing, Management and Organization, Entrepreneurship and Innovation, or General Business as described in the corresponding degree plan for that concentration.

Entrepreneurship Courses

ENTM 220 Entrepreneurship and Business Planning 3 cr.
In this course, students learn about innovation, entrepreneurship, and the lean startup in an experiential manner. Teams pursue their own innovative business idea based on the lean startup concepts, where they build on the design thinking methodology and interview potential customers in order to formulate a business plan, build a prototype, and test it for their new venture. Teams will be ideally composed of a mix of students coming from business, technical, and art majors to work together on developing creative, technically feasible, human-centered and financially feasible ventures. General Education/ Societies and Individuals. Junior or senior standing.

ENTM 221 Entrepreneurial Mindset 3 cr.
This course will expose the student to many of the topics currently dominating the study of entrepreneurship. These may include theoretical perspectives on the economic and social function of entrepreneurs, psychological and cognitive aspects of entrepreneurs, the intersection of opportunities and enterprising individuals, the decision to exploit, and the new venture creation process. This course is designed for students who wish to understand entrepreneurship from a deeper and more theoretical perspective than practitioner guidance. Prerequisite: MNGT 215.

ENTM 225/MNGT 235 Business Environment of the Firm 3 cr.
This course focuses on macro-organizational theories and their applications to analyze a firm's environment. Students will be introduced to system theory, institutional theory, and identity theory. Then students will learn how to apply external analysis tools such as Porter 5 forces, Strategic Grouping, and PESTEL. After taking this course, students are expected to have a clear understanding of the impact of the environment on organizations and to identify macro disruptors as threats or opportunities. This course will train students to think strategically about opportunities in their environments. Prerequisite: MNGT 215. Students cannot receive credit for both ENTM 225 and MNGT 235.

ENTM 230 Decision-Making Skills for Entrepreneurs 3 cr.
In this course, students will gain various decision-making skills that are relevant to the field

of entrepreneurship and will utilize various Artificial Intelligence (AI) tools that will help them, as entrepreneurs, make a number of decisions and confront a variety of problems, from financial management and client acquisition to product creation and marketing techniques. Students will also reflect on the strengths and weaknesses of AI in entrepreneurship as well as examine its ethical implications and impact on accuracy, productivity, and efficiency. Prerequisite: Senior Standing.

ENTM 232/FINA 232 Real Estate Management 3 cr.
This course is designed to give students a general overview of the real estate space. Topics include an introduction to real estate markets (sources of demand), real estate finance, project evaluation, elements of real estate law, appraisals, property development and property management. Business majors only. Prerequisite: FINA 210. Students cannot receive credit for both ENTM 232 and FINA 232.

ENTM 236/FINA 236 Entrepreneurial Finance 3 cr.
This course aims to take the student through the various stages of financing new venture deals, from inception to startup to harvest. The course teaches students how to identify new venture financing needs and corresponding financing sources. The course also examines new venture valuation techniques. From the investor's perspective, the course is designed to enable improved investment and financing decisions in entrepreneurial settings. From the viewpoint of the entrepreneur, it will examine financial planning and forecasting, evaluation of alternative sources of financing, venture capital, and basic company valuation. Business majors only. Prerequisite: FINA 210. Students cannot receive credit for both ENTM 236 and FINA 236.

ENTM 235 Family Business: Issues and Solutions 3 cr.
A course that focuses on family businesses: their importance, structure, governance, management and challenges; issues of succession, inheritance, family versus non-family management, and rivalry between siblings, cousins or across generations. Business majors only. (Offered in fall semester only). Prerequisite: MNGT 215.

ENTM 240 Social Entrepreneurship 3 cr.
A social enterprise is a hybrid organization that applies commercial strategies and uses market mechanisms to solve social issues. This course provides a foundation for students to understand social entrepreneurship. It reviews various schools of thought and perspectives on social entrepreneurship's role in tackling social issues, while covering concrete tools for students to begin to engage communities, identify a problem, and develop an innovative solution. Junior or senior standing.

ENTM 241/FINA 241 Venture Capital Management 3 cr.
This course provides the students with conceptual and practical knowledge about key operating and strategic aspects of an entrepreneurial business start-up, from inception to IPO. It covers operating and strategic issues including the development of a business plan and new venture strategies, the impact of marketing methods on financial requirements, the assessment and staging of the financing needs of the venture, sources of finance, advantages and drawbacks, valuation methods, IPO prerequisites and constraints, organizational design, along with harvesting alternatives. Business majors only. Prerequisite: FINA 210. Students cannot receive credit for both ENTM 241 and FINA 241.

ENTM 250 Special Topics 1, 2 or 3 cr.
A course that deals with special issues and concerns in entrepreneurship not included in regular courses. This course may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: Approval of track convener.

ENTM 251 Entrepreneurship Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: Approval of track convener.

ENTM 270 Launching a New Venture 3 cr.
This course focuses on the founding and development of new business ventures. It identifies the prerequisites for successful new ventures, the threats to their survival, and the practical actions entrepreneurs may take to overcome them and successfully grow their startup. Students will work in groups to create new startups while building viable business plans and paying attention to issues such as competitive analysis, financing options, team management, metric measurement, investment needs, and future plans. They will finally pitch their startups at the end of the course. Business majors only. (Offered in Spring semester only). Prerequisites: MNGT 215 and FINA 210.

ENTM 253 Technical Skills Workshop in Entrepreneurship and Innovation 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how to leverage specific tools, technologies, or methodologies in the field of Entrepreneurship. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career. Entrepreneurship and Innovation concentration only. Junior Standing.

Management Courses

MNGT 215 Fundamentals of Management and Organizational Behavior 3 cr.
A course that introduces the management discipline to students and familiarizes them with managerial and leadership skills appropriate in different contexts. It integrates theories of management with the applications in the real-world workplace. The course includes critical analysis of scenarios, guest speakers, and role-playing. The main topics cover traditional and contemporary management views and functions. It also includes topics related to leadership and employee motivation, strategic decision-making, power dynamics and politics, communication, personal growth within organizations, and managing groups and teams. General Education/Social Science list I course. Corequisite: ENGL 204.

MNGT 218 Advanced Topics in Organizational Behavior 3 cr.
This course provides an advanced perspective of the field of organizational behavior and management. Students will achieve an understanding of individual and group behavior in the workplace, and of what makes an organization function. A focus is placed on current management challenges in relation to individuals and interactions in organizations, and systems of work organization. The course illustrates the relevance of organizational behavior theory for practice through creating sustainable workplaces. Specific topics include motivation at work, promoting well-being, fairness and justice at work, leadership, organizational design, change management, and sustainable human resource management. Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 220 Human Resource Management 3 cr.
This course introduces the principles of human resource management. It helps students acquire the basic HRM concepts and equips them with the tools necessary for the effective management of people in organizations. Main topics covered include strategic HRM, planning and staffing, training and development, performance management, compensation, career management and global HRM. Business majors only. (Offered in Fall semester only). Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 222 HR Analytics
Data analytics, in general, is no longer about discovering interesting statistics and presenting them to business executives. In this era, big data is an important topic, enabling both tactical and strategic decision-making in every aspect of a business. In particular, the function of people analytics, which entails using data analytics tools to measure, report, and understand employee matters (from hire to exit, through learning and performance), is undergoing a major shift. This course will equip students with an inquisitive approach to analyzing people data within the workplace and studying the impact of the analyzed data on the overall organization. Students will learn how people analytics can help managers, executives, and HR professionals optimize employee value and drive effectiveness and efficiency in the employee's experience. Students are not required to have a background in data analytics to take this course; the first module will provide an overview of the foundation for using and statistically analyzing data that they will build on throughout the course. Business majors only. Prerequisite: BUSS 200, MNGT 215 and ENGL 204.

MNGT 223 Cross Cultural Management 3 cr.
The purpose of this course is to prepare students for professional life in the modern connected world. This course provides an opportunity to practice a collection of cross-cultural business tools through hands-on experiential activities in which students will work in a multi-cultural team. Students will develop an individual cross-cultural competency in the global business context and build the skills they need to communicate, problem-solve and collaborate in a global team environment—all essential 21st century skills. Business majors only. Prerequisite: MNGT215 and ENGL 204.

MNGT 224 Leadership in Organizations 3 cr.
In the fast-paced and ever-changing landscape of today's organizations, effective leadership is paramount. This course offers a comprehensive exploration of leadership within the context of modern workplaces. The course also explores issues around managing people and teams in the contemporary workplace. Students will delve into the multifaceted nature of leadership, examining its complexities, challenges, and opportunities. The course begins by framing leadership analysis, highlighting the inherent problems and complexities that leaders encounter in dynamic organizational environments. Students develop a nuanced understanding of the factors influencing contemporary leadership dynamics. Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 227 Managing Change in Organizations 3 cr.
Organizations today are characterized by increasing levels of complexity, uncertainty, and change. Organizations are increasingly faced with the need to adapt to change, and managers today must understand the various challenges, opportunities, and implications of these contexts to workplace dynamics, organizational performance, and sustainability. This course provides students with an understanding of what change is about, as well as perspectives on change management. The primary aim is to equip managers, leaders, consultants, and advisers with the requisite skills to navigate the complexities of organizational change effectively. Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 228 Contemporary Issues in Management and Organization 3 cr.
This course addresses contemporary issues in management theory and practice. The course reflects on the relevance of various management and organization topics in the context of the historical evolution of work and the employment relationship. The course also focuses on implications for employee attitudes and behaviors, and for organizations. The main topics include organizational culture, technology at work, change management, the social and psychological contracts of work, work-life balance, emotions at work, and workplace wellbeing. Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 230 International Business 3 cr.
A course on the management function in a global economy. Topics covered include substantive and stylistic challenges for senior and middle management in international cross-continent corporations and conglomerates, standardization and diffusion of authority and operations, mobility and self-reinvention, integration and differentiation. Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 231 Judgment & Decision Making 3cr.
Judgment and decision-making are at the very core of the manager's responsibility, but managers often make non-rational decisions. In this course students will learn about how managers and executives should make decisions as well as how they actually do make decisions. We explore the psychological and social forces that derail our rational thinking. The course also helps students identify where poor decision-making is likely to occur and provides tools necessary to combat non-rational decision-making in themselves and in others. Business majors only. Prerequisite: MNGT 215 and ENGL 204.

MNGT 233 Gender work and Inclusive Systems 3 cr.
This course raises awareness and deepens understanding of the significant role of gender and diversity in contemporary work organizations. It offers multiple perspectives to analyze issues of gender and diversity at the levels of identity, organizational practices and society. The course is designed to provide students with the necessary analytic tools to deepen their grasp of the challenges of building more inclusive workplaces by drawing from different foundational perspectives including: Managerial, Social Justice, and Critical-Feminist. The course provides variant rationales for building these more inclusive systems. Prerequisites: ENGL 204.

MNGT 235/ENTM 225 Business Environment of the Firm 3 cr.
This course focuses on macro-organizational theories and their applications to analyze a firm's environment. The course will introduce students to system theory, institutional theory, and identity theory. Then students will learn how to apply external analysis tools such as Porter 5 forces, Strategic Grouping, and PESTEL. After taking this course, students are expected to have a clear understanding of the impact of the environment on organizations and to identify macro-disruptors as threats or opportunities. This course will train students to think strategically about opportunities in their environments. Prerequisite: MNGT 215. Students cannot receive credit for both ENTM 225 and MNGT 235.

MNGT 234 Training and Development 3 cr.
This course introduces students to the theories, application, and skills development aspects of Training and Development. Students will learn how to assess training needs, design, and develop training materials, implement, and evaluate a training program from concept to application. In this regard, all concepts of training, including total needs' assessment, employees and trainees' learning motivation, knowledge transfer theories as well as training evaluation methods will be covered. Furthermore, the course provides a deep understanding of how Training and Development is integrated into the overall organizational strategy. Finally, students will develop their training abilities and skills by preparing and delivering short presentations and working on small projects to apply the basic theories related to the topic. Business majors only. Prerequisites: MNGT 215 and ENGL 204.

MNGT 250 Special Topics 1, 2 or 3 cr.
A course that deals with special issues and concerns in management not included in regular courses. This course may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Business majors only. Prerequisite: Approval of track convener.

MNGT 251 Management Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Business majors only. Prerequisite: Approval of track convener.

MNGT 253 Technical Skills Workshop in Management 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how to leverage specific tools, technologies, or methodologies in the field of management. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career. Management and Organization Concentration only. Junior Standing.

Marketing Courses

MKTG 210 Principles of Marketing 3 cr.
This course provides a basic exploration of strategic marketing, covering key concepts and contemporary practices across diverse settings. It delves into the application of modern marketing principles in product and service industries across enterprises of varying sizes, including analysis of buyer behavior, market segmentation and positioning, and development of the marketing mix elements. Corequisite: ENGL 204.

MKTG 221 Marketing Insights and Analytics
In today's fast-evolving marketing landscape, success hinges on harnessing the power of data. This course delves into the dynamic world of marketing insights and analytics, providing students with a comprehensive understanding of marketing research principles and techniques while emphasizing contemporary practices in analytics. Students will gain a holistic understanding and practical application of how data-driven insights serve as the cornerstone of informed decision-making in marketing strategy development and execution. Business majors only. Prerequisites: MKTG 210, BUSS 200 and ENGL 204.

MKTG 225 Strategic Brand Management 3 cr.
This course takes a customer-centric approach to explore and identify the ingredients for building, managing and communicating inspiring brands. Topics covered include understanding the functions of a brand, positioning and crafting the brand image, measuring brand equity and creating an effective communication strategy. Business majors only. Prerequisite: MKTG 210 and ENGL 204. Students cannot receive credit for both SOAN 231 and MKTG 225 or for both SOAN 235 and MKTG 225.

MKTG 227 Digital Marketing Strategy 3 cr.
This course delivers the frameworks and tools needed to design and implement a successful digital marketing strategy that achieves business objectives. Topics covered include Social Media and web analytics, influencer marketing, online campaigning, and online customer relationship marketing. Business majors only. Prerequisite: MKTG 210 and ENGL 204.

MKTG 231 Customer Experience Design 3 cr.
All customer-brand interactions involve experiences, good or bad. Successful companies like Apple, Starbucks, Netflix etc. strive to create holistic experiences for customers that include emotive, sensory, identity value to create strong and enduring customer-brand bonds, which are difficult for competitors to copy or break. Customer experience is an all-encompassing term that goes beyond traditional definitions of marketing, customer service, customer satisfaction, and loyalty. This course builds on and extends traditional marketing principles to enable students to develop compelling customer and brand experiences. Business majors only. Prerequisites: MKTG 210 and ENGL 204.

MKTG 235 Retailing and Merchandising 3 cr.
This course examines the opportunities and problems faced by marketers in contemporary retail formats. The principle issues involved in retailing are explored, including store location and layout, merchandise planning, buying and selling, category management, and coordination of store activities. Overall, the course allows students to develop appropriate skills and knowledge for effective and efficient decision-making in the contemporary retail environment. Business majors only. Prerequisite: MKTG 210 and ENGL 204.

MKTG 238 Public Relations 3 cr.
In this dynamic course, students delve into the exciting world of PR, exploring the strategic communication practices used to build and maintain positive relationships between organizations and their publics, along with managing brand reputation. Students will gain a comprehensive understanding of the evolving PR landscape, encompassing traditional and digital media, social media, crisis communication, and ethical considerations. Business majors only. Prerequisite: MKTG 210 and ENGL 204. Students cannot receive credit for both SOAN 234 and MKTG 238.

MKTG 240 Consumer Behavior 3 cr.
A course that focuses on the customer as the key to market success. Topics covered include the roles of a customer, market values a customer seeks, determinants of customer behavior, the customer's mindset, customer decision-making and customer-focused marketing. Business majors only. Prerequisite: MKTG 210 and ENGL 204.

MKTG 241 Luxury and Fashion Brand Marketing 3 cr.
Combining strategy and style, this course aims to equip a new generation of brand leaders with a deep understanding of the practice, passion, and impact of the luxury and fashion industries. Through theory and practice, students will understand the luxury brand world and its evolution, identify luxury and fashion customer profiles and behavior, and create luxury and fashion brand identity and desire. The learning plan will enable students to create desire and purpose, balance brand and performance, design for inclusivity and sustainability, and respond to fashion futures. Business majors only. Prerequisites: MKTG210 and ENG 204.

MKTG 242 Digital Content Creation for Business 3 cr.
This course provides students with the knowledge and tools needed to develop and produce the content required to activate a business's online brand strategy. This hands-on course is interdisciplinary and will cover: Understanding content objectives, briefs, and calendars, picking the right medium, and producing multimedia content including videos, photos, visuals, and copywriting. Business majors only. Prerequisites: MKTG210 and ENGL 204.

MKTG 250 Special Topics 1, 2 or 3 cr.
A course that deals with special issues and concerns in marketing not included in regular courses. It may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Business majors only. Prerequisite: Approval of track convener.

MKTG 251 Marketing Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration when existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Business majors only. Prerequisite: Approval of track convener.

MKTG 253 Technical Skills Workshop in Marketing 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how

to leverage specific tools, technologies, or methodologies in the field of marketing. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career.Marketing concentration only. Junior Standing.

BIDS Track Courses

In addition to the 39 credits of general undergraduate requirements from outside the school (listed earlier) and the 36 credits required in the business core (ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 239, BUSS 245, BUSS 249, DCSN 200, FINA 210, INFO 200, MKTG 210, MNGT 215 and a free Business elective), the track requires students following one of its concentrations to take 15 credits in the concentration area (including the required concentration courses in each area) and a technical skills workshop in the concentration area. Students may choose to pursue a concentration in Information Systems or Operations Management as described in the corresponding degree plan for that concentration.

DCSN 200 Operations Management 3 cr.
An introduction to contemporary operational management issues and techniques. The focus of the course is on the tradeoffs in various decision areas and how operational strategies are aligned with the organization strategy. Some of the main topics include capacity planning, flow time management, inventory management as well as quality management and control. Emphasis is placed on the development and use of quantitative models such as linear programming and decision trees to assist in decision-making. Students are expected to have some prior familiarity with Microsoft Excel.

DCSN 205 Managerial Decision-Making 3 cr.
An introduction to the tools and techniques of modern managerial decision-making, using spreadsheets as a modeling and analysis tool. The course addresses the formulation of models that can be used to analyze complex problems taken from various functional areas of management, including finance, marketing, operations and human resources. The goal is to understand how business decisions are reached, what tradeoffs are made and how outcomes depend on the underlying data. Decision-making is studied: under certainty (linear, integer and nonlinear programming; networks; project management; and multi-objectives); under uncertainty (decision analysis and decision trees) and under risk (simulation). Software tools such as Microsoft Excel, Excel Solver Add-in, Tree Plan, Risk Solver Platform, and Microsoft Project will be used for hands-on experiences. Business majors only. Prerequisites: MATH 204 and CMPS 208. Junior or senior standing.

DCSN 210 Supply Chain Management 3 cr.
Aims to provide the knowledge and tools necessary to develop, implement and sustain strategies for managing supply chains. The course will focus on both developing conceptual frameworks and using analytical tools for supply chain management. Real business cases will be extensively used. Supply chain concepts and solution techniques using analytical tools will be applied to various supply chain issues. Prerequisite: DCSN 200. Students cannot earn credit for both DCSN 210 and DCSN 214.

DCSN 211 Pricing and Revenue Management 3 cr.
Effective pricing and capacity management offer powerful levers that companies are increasingly using to squeeze more profits in competitive markets. The course focuses, at a tactical level, on how to integrate pricing, sales and product design decisions to extract maximal value from any mismatch between supply and demand. It also introduces pricing and capacity management as a hedging tool in the presence of various risk factors. It is based on model-building and relies on constrained optimization techniques implemented

through Excel and Solver. Business majors only. Corequisite: BUSS 200. Junior or senior standing.

DCSN 212 Project Management 3 cr.
Explores technical and managerial challenges of project management in general. The topics addressed in this course range from project selection techniques, project planning, budgeting, risk analysis, resource management to project monitoring and termination. The goal is to understand how project management decisions are reached, what tradeoffs are made, and how outcomes depend on the underlying situation. Decision analysis tools such as linear/non-linear programming and spreadsheet simulation are utilized. Software packages used are Microsoft Project, Risk Solver/Crystal Ball and Excel Solver. Business majors only. Prerequisites: DCSN 200 and BUSS 200.

DCSN 214 Sustainable Supply Chain Management 3 cr.
This course discusses the design and the management of sustainable supply chain processes. The course aims to provide students with an understanding of the sustainability challenges and opportunities facing supply chains today. It presents a general framework that allows an alignment between internal competencies of organizations and their market positioning. It discusses concepts and tools that enable an effective design of a sustainable supply chain network and a better management of resources and logistics. The course is case-based and driven by a balance of qualitative and quantitative approaches. Business majors only. Prerequisite: DCSN 200. Students cannot earn credit for both DCSN 210 and DCSN 214.

DCSN 215 Advanced Managerial Decision-Making Models 3 cr.
Addresses advanced models for decision-making from functional areas of management, including finance, marketing, operations and human resources, through case studies and use of applications software. Business majors only. Prerequisite: DCSN 205.

DCSN 216/INFO 216 Business Analytics Using Data Mining 3 cr.
Introduces applied data mining techniques including data processing and a set of data analytics tools related to predictive modeling such as classification and regression trees, logistic regression, artificial neural networks and other techniques. Students will learn how to use these tools to provide practical solutions to problems faced by businesses today. They will gain knowledge in how to improve decision-making by adopting a data analytics approach. The course is designed for advanced undergraduate students and features the use of data mining software. Case studies and practical examples will be extensively presented throughout the course. Business majors only. Prerequisite: BUSS 200. Students cannot receive credit for both DCSN 216 and INFO 216.

DCSN 220/FINA 240 Financial Modeling 3 cr.
This course is designed to provide students with the knowledge and skills needed to build, analyze, and interpret financial models. The course will cover essential financial concepts, Excel skills, and modeling techniques used in various industries. Students will gain hands-on experience in constructing financial models for decision-making and valuation purposes. The Financial Modeling course establishes a crucial bridge between foundational finance courses and advanced topics within the field. Building on the principles acquired in introductory finance and accounting courses, this specialized course delves into the practical application of financial concepts through the construction and analysis of sophisticated financial models. It complements accounting courses by providing students with a hands-on understanding of how financial statements and forecasting techniques are interwoven in real-world scenarios. Moreover, the course extends the quantitative skills developed in basic mathematics and statistics courses, honing them specifically for financial modeling purposes by introducing valuation techniques, scenario analysis, and the integration of Excel and VBA programming.

Business majors only. Prerequisite: BUSS 200 and FINA 210. Students cannot receive credit for both DCSN 220 and FINA 240.

DCSN 225/INFO 225 Enterprise Systems Design and Implementation 3 cr.
Provides students with a deeper understanding of business processes and enterprise systems. Different cross-functional business processes are covered, with an emphasis on how they interact to successfully deliver the business functions of an enterprise. The concepts in the course are reinforced by the use of Enterprise Resource Planning applications. The course also covers how enterprise data can be used to derive business insights and analytics. The following topical areas are emphasized in the course: business processes and enterprise systems, process integration, systems implementation and enterprise systems for business analytics. Business majors only. (Offered once a year: either in fall or spring semester). Prerequisites: INFO 200 and DCSN 200. Students cannot receive credit for both DCSN 225 and INFO 225.

DCSN 227 Operations Management II 3 cr.
Building on Operations Management (DCSN 200), the course focuses on the basic concepts, issues, and techniques for efficient and effective operations. Special emphasis is placed on process improvement and resource planning. Topics include Operations Strategy, Location and Layout Strategies, Lean Operations, Human Resources, Job Design and Work Measurement, Aggregate Planning S&OP, Material Requirements Planning (MRP) and Enterprise Resource Planning (ERP), Maintenance and Reliability, Learning Curves, and Short Term Scheduling. By the end of the course, students will have extended knowledge of the key role Operations Management plays in competitive advantage. Students should expect to become familiar with various tools of operations management and the behavioral aspects of managing and planning operations. Further, they will acquire some of the skills necessary to critically analyze a firm's performance from an operational point of view. Business majors only. Prerequisite: DCSN 200.

DCSN 250 Special Topics 1, 2 or 3 cr.
Special issues and concerns in business decision systems not included in regular courses. This course may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Business majors only. Prerequisite: Approval of track convener.

DCSN 251 Decision Systems Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Business majors only. Prerequisite: Approval of track convener.

DCSN 253 Technical Skills Workshop in Operations Management 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how to leverage specific tools, technologies, or methodologies in the field of operations management. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career. Operations Management concentration only. Junior Standing.

Management Information Systems Courses

INFO 200 Foundations of Information Systems 3 cr.
Introduces information systems that raise productivity, create customer value and sustain competitive advantage. The course shows how the integration of information technology and information systems in the organization's work processes adds value for the business and its

customers. It focuses on the following topical areas: competitiveness, functional information systems, e-commerce and supply chain systems, business intelligence systems and systems development. Junior or senior standing.

INFO 216/DCSN 216 Business Analytics Using Data Mining 3 cr.
Introduces applied data mining techniques including data processing and a set of data analytics tools related to predictive modeling such as classification and regression trees, logistic regression, artificial neural networks and other techniques. Students will learn how to use these tools to provide practical solutions to problems faced by businesses today. They will gain knowledge in how to improve decision-making by adopting a data analytics approach. The course is designed for advanced undergraduate students and features the use of data mining software. Case studies and practical examples will be extensively presented throughout the course. Business majors only. Prerequisite: BUSS 200. Students cannot receive credit for both DCSN 216 and INFO 216.

INFO 225/DCSN 225 Enterprise Systems Design and Implementation 3 cr.
Provides students with a deeper understanding of business processes and enterprise systems. Different cross-functional business processes are covered, with an emphasis on how they interact to successfully deliver the business functions of an enterprise. The concepts in the course are reinforced by the use of Enterprise Resource Planning applications. The course also covers how enterprise data can be used to derive business insights and analytics. The following topical areas are emphasized in the course: business processes and enterprise systems, process integration, systems implementation and enterprise systems for business analytics. Business majors only. (Offered once a year: either in fall or spring semester). Prerequisites: INFO 200 and DCSN 200. Students cannot receive credit for both DCSN 225 and INFO 225.

INFO 226 System Development and Database Design 3 cr.
This course emphasizes the issues facing businesses and management in the development of information systems: properly formulating business problems; targeting appropriate processes and functions; and requisite design and implementation processes. This course also introduces the central role of database management systems (DBMS) and their applications in the business IT/IS environment. Cases and real-life business needs will underscore these issues. Business majors only. (Offered once a year: either in fall or spring semester) Prerequisite: INFO 200.

INFO 227 Social Media in Digital Management 3 cr.
Social Media technologies (e.g., Instagram, Facebook, LinkedIn) are transforming society and businesses. While companies benefit from direct interaction with customers and a wealth of data that can be leveraged, they must strengthen their organizational agility and pace of coordination between the different departments (Sales, Marketing, Customer service, etc.). The course explains how data from social media can be used to drive business decisions as well as define and enhance strategies. Business majors only. Prerequisites: INFO 200, MKTG 210. Permission of instructor for non-OSB students.

INFO 232/ACCT 232 Accounting Information Systems 3 cr.
A course that explores in detail several typical Accounting Information System (AIS) application sub-systems, such as order entry/sales, billing/receivables/cash receipts, inventory, purchasing/accounts payable/cash disbursements, payroll and materials planning/production. This course includes understanding, documenting, designing, using and auditing these application subsystems. Business majors only. Prerequisites: ACCT 210 and INFO 200. Students cannot receive credit for both ACCT 232 and INFO 232.

INFO 235 Introduction to AI for Business 3 cr.
This course is designed to familiarize students with the fundamental concepts and principles of Artificial Intelligence (AI) and how businesses can use this technology to enhance processes and gain a competitive edge. It explains the history and foundation of AI, the landscape of its applications and tackles a few particular topics, mainly: machine learning, deep learning, recommendation engines, and natural language processing. The aim is to teach students how to apply these methods within a business context, using cloud services. The course does not require a technical background. Business majors only. Prerequisite: INFO 200.

INFO 250 Special Topics 1, 2 or 3 cr.
Special issues and concerns in business information systems not included in regular courses. This course may be repeated for credit when topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Business majors only. Prerequisite: Approval of track convener.

INFO 251 Information Systems Tutorial 0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Business majors only. Prerequisite: Approval of track convener.

INFO 253 Technical Skills Workshop in Information Systems 0cr.
A twelve-hour workshop designed to provide insights into emerging trends and teach how to leverage specific tools, technologies, or methodologies in the field of information systems. This workshop aims to enhance technical skill sets, fostering a higher level of proficiency and efficiency in the future career. Information Systems concentration only. Junior Standing.

Maroun Semaan Faculty of Engineering and Architecture (MSFEA)

Undergraduate Program

Officers of the Faculty

Fadlo R. Khuri	President of the University
Zaher Dawy	Provost
Alan Shihadeh	Dean
Mahmoud Al-Hindi	Associate Dean
Daniel Asmar	Associate Dean
Riad Chedid	Associate Dean
Imad El Hajj	Associate Dean
Howayda Al-Harithy	Director of the School of Architecture and Design
Bradley Jon Tucker	Registrar
Antoine Sabbagh	Director of Admissions
Lokman Meho	University Librarian

Faculty Administrative Support

Alia Kazma Serhal	Student Services Manager
Olga Safa	Financial And Administrative Manager
Sara Jibbaoui	Financial Officer
Nagham Kanj	Student Services Officer
Aya Wehbe	Contracts Officer

Historical Background

As early as 1913, the university recognized the need for engineering education and training in the Middle East, and courses in this field were offered in the School of Arts and Sciences. By 1944, sufficient additional courses had been added to permit the granting of the degree of Bachelor of Science in Civil Engineering. The last class in this program graduated in June 1954. In 1951, a separate School of Engineering was established and curricula were initiated in civil engineering, mechanical engineering, electrical engineering and architectural engineering. The years from 1951 to 1954 were a transitional period of continuous development toward the new curricula, which were established in 1954. In 1963, a program leading to the degree of Bachelor of Architecture was introduced, replacing the Bachelor of Architectural Engineering program, the last class of which graduated in June 1966. In that year, the school was renamed the Faculty of Engineering and Architecture. Since then, curricula have been under constant review with changes introduced as necessary to keep pace with modern technology, conform to sound developments in engineering and architecture education, and meet the evolving needs of the region. In 1986, a new undergraduate major in computer and communications engineering was added within the Department of Electrical and Computer Engineering. In 1992, a new major in graphic design was added within the Department of Architecture and Design leading to a Bachelor of Graphic Design. In 2006, the name of the degree was changed to Bachelor of Fine Arts in Graphic Design, and the name of the Bachelor of Engineering in Electrical Engineering degree was changed to Bachelor of Engineering in Electrical and Computer Engineering. In 2009, two Bachelor of Science programs were introduced, the first in construction

engineering, housed in the Department of Civil and Environmental Engineering, and the second in chemical engineering, housed in the Department of Mechanical Engineering. A Bachelor of Engineering program in chemical engineering was simultaneously launched in 2009 with the Bachelor of Science program. In 2014, a Bachelor of Engineering program in industrial engineering was introduced. The chemical engineering programs are now housed in the Department of Chemical and Petroleum Engineering, while the industrial engineering program is housed in the Department of Industrial Engineering and Management. The faculty was renamed Maroun Semaan Faculty of Engineering and Architecture in 2017.

In 2019, a Bachelor of Engineering program in computer science and engineering was started in the Department of Electrical and Computer Engineering.

The program of Landscape Architecture previously at FAFS, was transferred to MSFEA starting July 2024.

Accreditation

The Bachelor of Engineering programs in chemical engineering, civil engineering, computer and communications engineering, electrical and computer engineering, and mechanical engineering, and the Bachelor of Science program in chemical engineering are accredited by the Engineering Accreditation Commission of ABET.

Mission

We offer world-class educational programs that prepare students for the engineering, architecture and design professions. Rooted in the liberal education model, our programs also prepare students to be engaged citizens and leaders, entrepreneurs and researchers who deploy their skills with ingenuity, integrity and a sense of responsibility towards future generations. Our faculty produces transformative knowledge and technology through internationally-recognized research and design, and seeks to leverage the special contexts of Lebanon and the region to define highly novel and relevant research programs. We impact policy and practice through our alumni and by directly engaging industry, government and the public at large.

Undergraduate Programs

The Maroun Semaan Faculty of Engineering and Architecture offers programs of study leading to the degrees of Bachelor of Architecture (BArch), Bachelor of Fine Arts (BFA) in Graphic Design and Bachelor of Engineering (BE), with majors in chemical engineering, civil engineering, computer and communications engineering, computer science and engineering, electrical and computer engineering, industrial engineering, and mechanical engineering; and Bachelor of Science (BS) with majors in chemical engineering and construction engineering. The curriculum of the BArch degree extends over 14 terms (ten 16-week terms and four eight-week summer terms), totaling 192 weeks. Although the program is completed in five calendar years, it is equivalent to a program of six academic years that does not include summers. The curriculum of the BE degree and that of the BFA degree are divided into 11 terms (eight 16-week terms and three eight-week summer terms), totaling 152 weeks. This duration is equivalent to five academic years without summers, but the program is completed in four calendar years. The curriculum of the BS degree extends over eight or nine terms (six 16-week terms and two or three eight-week summer terms).

The faculty reserves the right to make changes to the curriculum, course content, and regulations as it deems appropriate and without prior notice.

Admissions

Admission to First Year

Admission is by selection of a limited number of the most promising, eligible applicants. All candidates for admission to the Maroun Semaan Faculty of Engineering and Architecture must have completed the pre-professional educational requirements of the candidate's country and the approved freshman program in the Faculty of Arts and Sciences of this university as described in this catalogue, or a program recognized as equivalent. The certificates, recognized for admission to the first year in the Maroun Semaan Faculty of Engineering and Architecture, are listed in the Admissions section of this catalogue. Holders of the technical baccalaureate (BT) are only eligible for admission to the same major as that of their BT.

Admission of Transfer Students

Students attending recognized institutions of higher learning, including AUB, may apply for transfer to any of the undergraduate majors in the MSFEA, depending on availability of places and subject to the following conditions. Students admitted to the Architecture or Graphic Design programs can start in the Fall term only. Applicants must have:

- completed the equivalent of the sophomore class at the college or university from which they are transferring,
- attained a minimum cumulative GPA of 3,
- taken at least 12 credits of math and basic science courses at the sophomore level or higher and attained a total average in these courses of at least 3.0. This requirement does not apply to applicants to the Architecture and Graphic Design programs,
- and have satisfied the university English requirements for admission.

Applications of transfer students are evaluated and approved by the departments and the Undergraduate Admissions Committee of the faculty. The term in which the student is placed and the complete program of study in the major in which the student is admitted, are determined by the department concerned.

Residency Requirements

Students of the Maroun Semaan Faculty of Engineering and Architecture must meet the following minimum residence requirements:

- **Engineering, Graphic Design, or Landscape Architecture Majors:** A student must register in residence at the Maroun Semaan Faculty of Engineering and Architecture for the last four regular terms and should complete at least 50 credits during this period.
- **Architecture Major:** A student must register in residence at the Maroun Semaan Faculty of Engineering and Architecture for the last five regular terms and should complete at least 65 credits during this period.

Academic Rules and Regulations

University regulations apply with the following additional provisions:

- Students returning from an exchange program must have obtained a minimum grade of C+ on a course taken during the exchange in order to transfer it. For more information regarding credit transfer for students returning from study abroad, refer to the general university academic information section of the catalogue
- Transfer students must have obtained a minimum grade of B to transfer a technical, math or science course or a minimum grade of C+ to transfer other types of courses.

Graduation Requirements

To be eligible for graduation with the bachelor's degree, a student must have passed all the required courses and must have:

- attained a minimum cumulative GPA of 2.3,
- attained a minimum cumulative GPA of 2.3 in major courses as specified by the department,
- met the residency requirements,
- and satisfied the faculty with respect to the student's professional development and conduct.
- student must apply for graduation online

Class Status

The class status of students is as follows:

A student's status is changed to that of a higher year if her/his cumulative number of failed, withdrawn or unregistered credits from the regular credit hour requirements does not exceed seven.

First Year	Terms I and II
Second Year	Terms III, IV and V
Third Year	Terms VI, VII and VIII
Fourth Year	Terms IX, X and XI
Fifth Year (Architecture)	Terms XII, XIII and XIV

Minors

For all minors please refer to the general university academic information section of this catalogue.

Courses

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture, including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It is interdisciplinary in nature bringing ideas and solutions from all disciplines in engineering and architecture. Annually.

FEAA 500/500A Cooperative Education and Experiential Learning
This course places students in a recognized firm in Lebanon or abroad for a supervised immersive learning experience in which they work as junior-level professionals in their fields of study. For a minimum of six months, students work full-time in a paid position where they apply their knowledge to challenging problems related to their field of study. This course extends over two terms and is registered twice as FEAA 500 and FEAA 500A in order to cover the six months period. FEAA 500: 0 credit- 3 billing - grade (PR) – prerequisites: approval of the course coordinator and completion of a minimum of 90 credits for engineering students (120 credits for Architecture students). FEAA 500A: 3 credits – 0 billing – prerequisites: FEAA 500.

FEAA 501 Final-Year Project Accelerator I 0 cr.
This sequence of two courses provides selected Final-Year Project (FYP) students with the knowledge, tools, and mentorship needed to transform their technical FYP into a viable business by the time they graduate. Topics include design thinking, business planning, business modeling, team formation, marketing, finance, legal aspects, and pitching. Annually in Fall term. Co-requisite: Final-Year Project in student home department.

FEAA 502 Final-Year Project Accelerator II 0 cr.
This sequence of two courses provides selected Final-Year Project (FYP) students with the knowledge, tools, and mentorship needed to transform their technical FYP into a viable business by the time they graduate. Topics include design thinking, business planning, business modeling, team formation, marketing, finance, legal aspects, and pitching. Annually in Spring term. Pre-requisite: FEAA 501.

FEAA 510 Design for Circularity
Circular design is a design approach that contributes to Circular Economy (CE) through regenerative systems that maintain the quality of life while creating social, economic, and ecological value. This project-based studio course builds a systemic understanding of the needed shift in design perspective to transform the current linear model to a circular one. It provides students with the mindset, tools, and knowledge to assess the circularity of products and processes, design circular processes, and design products to be easily reused, repaired, remanufactured, or recycled. It also introduces the importance of the use of digital technologies to enable and accelerate the transition to CE. 3 credits, Prerequisites: Instructor's approval.

FEAA 520 Data Centric Design
This course introduces students to the various types of data, the basics of sensing, data acquisition, database design, and data analytics. FEAA *** combines theoretical topics in machine learning with practical methods for solving problems, using Python or other programming languages. The students are exposed to supervised and unsupervised machine learning algorithms (e.g., clustering, linear regression, and classification), as well as basic deep learning architectures. The topics are demonstrated with examples from all engineering disciplines and several hands-on laboratory sessions. Prerequisites: EECE 230/231, MATH 201, and STAT 230 (MATH 218/219 is preferred but not mandatory).

VIPP 201 Vertical Integrated Project 1 cr. for first-year students

VIPP 202 Vertical Integrated Project 2 cr. for second-year students

VIPP 301 Vertical Integrated Project 1 or 2 or 3 cr. for third-year students

VIPP 401 Undergraduate Research for VIPP students 3 cr.
In this course, undergraduate senior or junior students engage in applied research with faculty and graduate students on multi-disciplinary, team-based research projects. Students work with faculty and industry mentors on real-world large-scale projects with students from different majors. Participants develop research experience and team skills while integrating knowledge from previous courses and refining their professional skills (teamwork, project planning, and communications).

Biomedical Engineering Graduate Program

Coordinator:	Mhanna, Rami (Biomedical Engineering, MSFEA)
Co-coordinator:	Rahal, Elias (Experimental Pathology, Immunology and Microbiology, FM)
Coordinating Committee Members:	Amatoury, Jason (Biomedical Engineering, MSFEA) Daou, Arij (Biomedical Engineering, MSFEA) Darwiche, Nadine (Biochemistry & Molecular Genetics, FM) El Hajj, Albert (Surgery, FM) Khraiche, Massoud (Biomedical Engineering, MSFEA) Refaat, Marwan (Internal Medicine, FM) Saad, Walid (Chemical Engineering, MSFEA) Zouein, Fouad (Pharmacology and Toxicology, FM)

Minor in Bioengineering Design (18 Credits)

The minor in Bioengineering Design aims at preparing students for design and innovation in the field of bioengineering. The minor will educate students on the process of designing engineering solutions with focus on biomedical and healthcare applications.

The minor in Bioengineering Design is open to AUB students from all majors who have completed their first academic year (non-engineering students) or their first two academic years (engineering students) and who have a cumulative GPA of 2.3 or more. The minor will be indicated on the transcript of the student who completes all the requirements described below. To graduate with a minor, a student must attain a minor GPA of 2.3 or more to satisfy its requirement.

The minor requirements are divided into a set of core courses and a set of elective courses with a total of 18 credits, as follows:

- BIOL 210 [3 cr.] (can be replaced by BIOL 202 or PHYL 246)
- BMEN 501 [3 cr.]
- BMEN 502 [3 cr.]
- BMEN 600 [3 cr.]
- One biomedical engineering advanced topics course from List A below [3 cr.]
- One elective course from either List A or List B below [3 cr.]

Elective Courses

- List A: BMEN 603/CHEN 675, BMEN 606, BMEN 609, BMEN 611.
- List B: INDE 412, BMEN 601/MECH 635, BMEN 602, BMEN 604/CHEN 673, BMEN 605, BMEN 607/MECH 633, BMEN 608/MECH 634, BMEN 610, EECE 601, EECE 602, EECE 603, EECE 605, MECH 607, MECH 631, MECH 705, BIOC 321 and BIOC 322 and 1 credit biomedical course (e.g., HUMR 310A lab), BIOC 326A and BIOC 326B and 1 credit biomedical course (e.g., HUMR 310A lab), BIOL 251, BIOL 310, EPHD 310**.**

BMEN 501 Bioengineering Design Fundamentals 3 cr.
The course aims to educate and train students in the process of utilizing engineering design concepts, methodologies, and tools for developing medical technologies. The course will teach the design process focused on development of engineering solutions in healthcare. This will include problem definition, identifying needs, setting specifications and translating them to prototypes, testing and design refinements. The material will be taught partly through active discussions, in class, of design topics, case studies, and design exercises. Also, in the final part of the course the students will be challenged to identify a problem and use the design process to develop the needs and specifications. In addition, students will learn about intellectual property, research ethics, and various regulations for biomedical technology and human safety considerations.

BMEN 502 Bioengineering Design Capstone 3 cr.
The course provides practical training in engineering design as students are placed within design groups to work through a real life iteration of the engineering design process they learned in BMEN501 for an idea either of their own or provided by faculty members.

Interdisciplinary teams will typically be paired up with two faculty mentors, one from MSFEA and one from FM. Students will be challenged to innovate and improve clinical, diagnostic, or patient care technologies via need-based problem statements under the guidance of their faculty mentors. Each team will complete the course by delivering a prototype or a proof of concept of their engineering solution capable of demonstrating the required functions of the intended solution. Each team will present the outcome of their work in technical reports and oral presentations. Prerequisite: BMEN501.

BMEN 601/MECH 635 Computational Modeling of Physiological Systems 3 cr.
This course focuses on the quantitative modeling of different physiological systems. It provides students with current concepts of the mathematical modeling, and different quantitative descriptions of cellular and organ physiology. At the subcellular/cellular level, we will examine mechanisms of regulation and homeostasis. At the system level, the course will cover basic aspects of anatomical and pathophysiological features of the nervous, neural, cardiovascular and respiratory systems. Several physiological processes are treated as case studies for increasing complexity in modeling dynamical systems. Prerequisites: MATH 202 and PHYL 346, or consent of instructor.

BMEN 602 Computational Modeling of Cardiovascular and Pulmonary Systems 3 cr.
The need for better understanding the mechanics and tools for computational modeling of cardiovascular and respiratory systems in healthy and diseased conditions is constantly increasing. This is a result of the enormous advances made in the science and engineering of both surgical and therapeutic medicine. This course covers the modeling and simulation of cardiovascular and respiratory systems. It will provide the students with a thorough understanding of the anatomy, physiology and mechanics of cardiovascular and respiratory systems as well as the computational tools for modeling and simulation of cardiac, circulatory and respiratory systems in healthy and diseased conditions.

BMEN 603/CHEN 675/ MECH798J Tissue Engineering 3 cr.
In a world of aging population, an ever-increasing demand for improvement of healthcare services and need for replacement organs and tissues are arising. The limited pool of donors together with the problem of donor organ rejection is a strong driver for engineering tissues and other body parts. Tissue engineering is an interdisciplinary field that uses cells, biomaterials, biochemical (e.g. growth factors) and physical (e.g. mechanical stimulation) signals, as well as their combination to generate tissue-like structures. The goal of tissue engineering is to provide biological substitutes that can maintain, restore or improve the function of damaged organs in the body. This course will introduce interested students to the new field of tissue engineering and provide insight on cutting edge applications in this area.

BMEN 604/CHEN 673 Engineering of Drug Delivery Systems 3 cr.
This course focuses on recent advances in the development of novel drug delivery systems. The fundamentals of drug delivery are discussed. Various strategies to tune and control the release of active agents for optimized therapeutic outcomes are explored. The course covers polymers and techniques used to produce drug nanoparticles, with specific examples of nanoparticle-based drug delivery systems. Prerequisites: CHEN 314 and CHEN 411, or consent of instructor.

BMEN 605 Biomedical Imaging 3 cr.
Biomedical imaging offers an unprecedented view into the structure and function of a living body, and as such plays an essential role in medical practice and research. This course will provide students with an overview of the key concepts underlying the primary diagnostic biomedical imaging modalities, including: ultrasound, x-ray, computed tomography and magnetic resonance imaging. Students will gain an understanding of the physical

principles and theoretical foundations governing the operation of each imaging modality, the technology that translates theory into practice, and the basics of image formation. Students will also learn about clinical and research applications in imaging. The course includes class sessions, demonstrations, tours and research seminars.

BMEN 606 Nanobiosensors 3 cr.
This course will provide a comprehensive analysis of the field of nanoengineering with a focus on biosensors including common modalities, basic theoretical considerations for sensor operation, physics of detection and applications in research and medical diagnostics. The course will cover the major types of electronic nanobiosensors for biological signal detection (potentiometric, amperometric, and mass based sensors) and their applications in the fields of neural engineering, DNA sequencing and cardiovascular early disease detection. The course will enable students to have a strong grasp of fundamentals of biosensor design, select sensors for various applications and evaluate new and emerging technologies. Prerequisites: EECE 210 (or equivalent) and BIOL 210 (or equivalent); or consent of instructor.

BMEN 607/MECH 633 Biomechanics 3 cr.
A course on the study of the biomechanical principles underlying the kinetics and kinematics of normal and abnormal human motion. Emphasis is placed on the interaction between biomechanical and physiologic factors (bone, joint, connective tissue, and muscle physiology and structure) in skeleto-motor function and the application of such in testing and practice in rehabilitation. The course is designed for engineering students with no previous anatomy/physiology. Prerequisites: CIVE 210, MECH 320 or CIVE 310; or consent of instructor.

BMEN 608/MECH 634 Biomaterial and Medical Devices 3 cr.
A course that examines the structure-property relationships for biomaterials and the medical applications of biomaterials and devices. The first part of the course focuses on the main classes of biomaterials, metal, ceramic, polymeric and composite implant materials, as well as on their interactions with the human body (biocompatibility). The second part of the course examines the various applications of biomaterials and devices in different tissue and organ systems such as orthopedic, cardiovascular, dermatologic and dental applications. Experts from the medical community will be invited to discuss the various applications. Prerequisite: MECH 340 or consent of instructor.

BMEN 609 Computational Neuroscience 3 cr.
The human brain, perhaps the most complex, sophisticated, and complicated learning system, controls virtually every aspect of our behavior. The central assumption of computational neuroscience is that the brain computes. What does that mean? Generally speaking, a computer is a dynamical system whose state variables encode information about the external world. In short, computation equals coding plus dynamics. Some neuroscientists study the way that information is encoded in neural activity and other dynamical variables of the brain. Others try to characterize how these dynamical variables evolve with time. The study of neural dynamics can be subdivided into two separate strands. One tradition, exemplified by the work of Hodgkin and Huxley, focuses on the biophysics of single neurons. The other focuses on the dynamics of networks, concerning itself with phenomena that emerge from the interactions between neurons. Therefore computational neuroscience can be divided into three sub-specialties: neural coding, biophysics of neurons, and neural networks. This course will introduce engineers, physicists, computational scientists, mathematicians and other audiences to the neurosciences from the cellular level and the network level as seen from computational lenses. Prerequisites: BIOL 201 (or equivalent) and Math 202, or consent of instructor.

BMEN 610 Micro and Nano Neural Interfaces 3 cr.
Neural interfaces are micro and nano devices that form the connection between the biological neural tissue and the external electronic devices. These devices are designed for mapping, assisting, augmenting, or repairing neural pathways. The course will focus on physical, chemical and neurophysiological principles of neural interfaces, theoretical and functional basis for their design, micro and nano fabrication techniques and applications in neural prosthesis for Brain Machine Interface. Topics covered in class will include; Neural Engineering, Brain Machine Interface, Microfabrication, Nanofabrication, Soft-lithography, Electrokinetics, Electrochemistry, Neural probes, Biocompatibility, Microelectrodes, NeuroMEMS (neuro microelectromechanical systems), BioMEMS (biomedical microelectromechanical systems).

BMEN 611/MECH611 Computational Modeling in Biomechanics 3 cr.
This course is open to engineering, math, science and medical students wanting a glimpse into the world of computational finite element modeling and simulation to investigate and solve biomedical problems. Students will take a journey through the processes involved in producing a computational finite element model in the biomedical field; starting at construction of model geometry from medical imaging data (CT/MRI), through to model creation, simulation and visualization using finite element analysis software (ANSYS Workbench). Students will also be exposed to select experimental lab techniques in biomechanics and physiology that are used in model development and validation. In pursuit of developing an appreciation for the areas covered, the course will incorporate a mix of theory, demonstrations, practice, real-world modeling applications and research seminars.

Minor in Humanitarian Engineering

The Minor in Humanitarian Engineering and Public Health Innovations is offered jointly by the Faculty of Health Sciences and the Maroun Semaan Faculty of Engineering and Architecture.

The minor is open to undergraduate students from all majors. It is a multidisciplinary offering that provides undergraduate students with the knowledge of the humanitarian engineering field, and equips them with the skills required to find innovative design solutions for challenges faced by disadvantaged populations taking into consideration two complementary perspectives; public health perspective and engineering perspective.

Students who complete the minor will be able to:

1. Apply participatory needs assessment tools and analyze the different dimensions of a public health problem.
2. Apply formal design methods to develop practical, feasible, scalable, and sustainable humanitarian engineering and public health innovations and interventions.
3. Apply skills required to manage complex projects while working in multidisciplinary teams.
4. Demonstrate entrepreneurial skills to take a solution/intervention from prototype to product.
5. Articulate and adhere to ethical standards in the process followed and in the intervention designed.

6. Present and document a problem and its solution to a diverse target audience.

To graduate with the minor, a student must attain a minor GPA of 2.3 or more to satisfy its requirements.

The minor in Humanitarian Engineering and Public Health Innovations consists of 15 credits, according to the following requirements:

- HEHI 201, "Foundations of Humanitarian Engineering and Public Health Innovations"
- HEHI 202, "Capstone: Humanitarian Engineering and Public Health Innovations"
- One design course from the following list: AGSC 330, ARCH 039, ARCH 061, ARCH 064, ARCH 344, BMEN 501, CHEN 471/571, CHEN 619, CHEN 798A, CIVE 552, CIVE 601, CIVE 628, CIVE 686, EECE 461, EECE 560, EECE 675, ENMG 663, ENMG 698E, ENSC 633, ENST 300, FSEC 310, FSEC 315, HPCH 204, HPCH 212, HPCH 237, INFO 205, LDEM 254, LDEM 633, MECH 530, MKTG 234, PBHL 303, URDS 664, URPL 641
- One ethics course from the following list: BUSS 215, INDE 410, MCOM 215, MHRM 304, PHIL 205, PHIL 209, PSYC 305
- One social entrepreneurship course from the following list: AGBU 229, ARCH 068, ENMG 654, ENTM 240, ENTM 320, INDE 412, MFIN 359

Students interested to enroll in the minor are encouraged to inform the coordinators of the program at **healthengineering@aub.edu.lb** to benefit from adequate advising on study plans and ensure completion of all requirements.

HEHI 201 Foundations of Humanitarian Engineering and Public Health Innovations 3 cr.
This is a multidisciplinary course that covers fundamentals of designing solutions for health challenges faced by disadvantaged populations. It introduces tools for identifying humanitarian and/or development needs and designing practical, scalable and sustainable solutions and interventions. The course is offered to students from all majors. Students will be exposed to health and health system challenges in addition to design fundamentals including participatory needs assessment, formal multidisciplinary design processes, and relevant technologies and tools with real world applications and case studies.

HEHI 202 Capstone: Humanitarian Engineering and Public Health Innovations Capstone 3 cr.
The capstone project course is an interdisciplinary service learning design course focused on development and humanitarian engineering solutions for health challenges. The capstone is divided into two sub-courses, HEHI 202A (1cr.) and HEHI 202B (2cr.), and must be registered in 2 consecutive semesters. In the capstone, students apply all tools learned in HEHI 201. Students work in multidisciplinary teams with disadvantaged communities, under joint supervision of at least two mentors from MSFEA, FHS, and other faculties. Prerequisite: HEHI 201.

Upon prior approval of the students' advisor and the coordinators of the Humanitarian Engineering Initiative, students who are required, as part of their degree requirement, to complete a capstone or final year project, can count that experience towards fulfilling the capstone requirement for the minor.

Certificate Option

Students can opt for a certificate in Humanitarian Engineering and Public Health Innovations.

The "Humanitarian Engineering and Public Health Innovations" certificate requirements are:

- HEHI 201, "Foundations of Humanitarian Engineering and Public Health Innovations"
- HEHI 202, "Capstone: Humanitarian Engineering and Public Health Innovations Capstone"
- An internship approved by the Humanitarian Engineering Initiative of at least 8 weeks full-time

Students should declare the certificate before completing the requirements.

Upon prior approval of the students' advisor and the coordinators of the Humanitarian Engineering Initiative, students who are required, as part of their degree requirement, to complete an internship or practicum, can also count that experience towards fulfilling the internship requirement for the certificate.

School of Architecture and Design

Founding Director of the School of Architecture and Design:	Al-Harithy, Howayda
Graduate Programs Coordinator:	Fawaz, Mona
Architecture Track Convener:	Yeretzian, Aram
Graphic Design Track Convener:	Gharbieh, Ahmad
Landscape Architecture Track Convener:	Abunnasr, Yaser
Professors:	Al-Harithy, Howayda; Harb, Mona; Musfy, Leila; Fawaz, Mona; Talhouk, Salma; Zurayek, Rami
Associate Professors:	Abunnasr, Yaser; Ghaibeh, Lina; Gharbieh, Ahmad; Najjar, Karim, Aramouny, Carla
Assistant Professors:	Acikgoz, Umit; Al-Akl, Nayla; Dreksler, Beata; Khoury, Yara; Patt, Trevor; Traboulsi, Jana; Yeretzian, Aram
Assistant Professors of Practice:	Fayad, Nicolas; Frem, Sandra
Adjunct Professors:	Makhzoumi, Jala; Tabet, Jad
Adjunct Associate Professor:	Trovato, Maria Gabriella
Senior Lecturers:	Abboud, Rania; Abdalhay Alkhayat, Nadine; Al-Kadi, Makram; Alamuddine, Hana; Balaa, Lara; Berro, Maher; Braidy, Michele; Boyadjian, Raffi; Charafeddine, Leen; Fayad, Farah; Gemayel, Imad; Genz, Bettina; El-Imam, Hatem; Hassan, Sinan; Jamal, Sany; Kosermelli, Simone; Mallat, Bernard; Shaiban, Houssam; Yamout, Nadine
Lecturers:	Abi Hanna, Ghita; Apelian, Khajag; Bacha, Karim; Bacho, Omar; Badran, Noura; Basbous, Monica; Baz, Joan; Bou Chedid, Rana; Bou Nasr, Roland; Hanna, George; Hassoun, Nour; Issa, Maha; Khouja, Ahmad; Khoury, Greta; Melhem, Wissam; Moussawer, Karim; Muhsen, Dana; Nader, Halim; Youssef, Shawki; Zahzah, Abdul-Rahman
Senior Instructors:	Badran, Zeina; Fidawi, Maya; Saksouk Sasso, Abir
Instructors:	Al Baalbaky, Ahmad; Fabian, Halim; Faour, Batoul; Farah, Karim; Mezher, Fouad; Kanaan, Mohamad; Kattan, Sarah-Rita; Ohannessian, Shoghag; Saber, Romy; Traboulsi, Tanya
Lab Instructor:	Azzi, Ghinwa; Khalil, Mirella

Architecture

Mission Statement

The Bachelor of Architecture program offers students a first professional degree that qualifies them to practice architecture. The program aims to graduate well-rounded intellectuals, critical thinkers and skilled professional architects who are committed to the advancement of the field and practice and who have a sense of responsibility for the built environment and natural resources. Design is approached as a research- oriented process that is culturally grounded, theoretically informed and technically advanced so as to enable graduates to become lifelong learners and take a leading role in professional practice both in Lebanon and the region.

Program Description

The Architecture program comprises a total of 174 credit hours normally taken over five years. The curriculum is structured as follows: 1) Two foundation years, first and second, with core requirements in design, technical and history courses that offer students basic skills and knowledge in design and related areas. 2) Two advanced years, third and fourth, with core requirements in advanced design, technical, history and theory courses, reinforced by the distribution electives. Two of the design studios at this level are thematic vertical studios. 3) Final year, fifth year, with a two-semester design thesis and project and advanced electives. In order to pass a year, students must obtain a minimum GPA of 2.3 in both design courses offered in any given year. If the GPA is below 2.3, the student must repeat the design studio(s) in which s/he received a grade below C+.

The degree requirements in Architecture consist of the following:

- 117 credit hours of mandatory core courses
- 24 credit hours of approved SoAD/MSFEA field electives distributed as follows:
  - 3 credit hours in Category A: Representation
  - 3 credit hours in Category B: History and Theory
  - 3 credit hours in Category C: Technology and Professional Practice
  - 15 credit hours in any of categories A, B or C
- 6 credit hours of free electives in consultation with the academic advisor
- 27 credits hours of General Education courses
- **Note: Total GE requirement of 39 credit hours includes 12 to 15 credits satisfied within the Architecture core program**

To meet the General Education requirements of AUB, students must take:

- 6 credit hours in Understanding Communication (English), including ENGL 203 and ENGL 206
- 3 credit hours in Understanding Communication (Arabic)

- 9 credit hours of approved electives in Cultures and Histories, including 6 credit hours satisfied by ARCH 121 and ARCH 122
- 3 credit hours of approved elective in Human Values
- 6 credit hours of approved electives in Societies and Individuals, including 3 credit hours by ARCH 432
- 9 credit hours of approved electives in Understanding the World and Quantitative Reasoning with at least 3 credits from each, including ARCH 151 (from the Understanding the World category)
- 3 credit hours of an approved elective in Community Engaged Learning (can be satisfied from a GE course, or from an approved Field elective such as ARCH 061 DI-Lab). If the Community Engaged Learning requirement is satisfied by a Field elective within the program, then an additional 3 credit hours free elective will be required.
- Additional Thematic requirements: One of the GE courses above has to cover the theme of History of Ideas (CHLA designation), and one course has to cover the theme of Social Inequalities (satisfied by ARCH 432).

Curriculum for the Degree of Bachelor of Architecture

First Year

Fall term		**Credits**
ARCH 100	Basic Design	6
ARCH 111	Drawing I	3
ARCH 121	History of Art and Architecture I	3
FEAA 200	Introduction to Engineering and Architecture	3
ENGL 203	Academic English	3
		Total 18
Spring term		**Credits**
ARCH 101	Architecture Design I	6
ARCH 112	Drawing II	3
ARCH 122	History of Art and Architecture II	3
ARCH 151	Statics and Mechanics of Solids	3
		Total 15

Second Year

Summer term		**Credits**
ARCH 241	Surveying Regional Architecture 2D-3D	9
Fall term		**Credits**
ARCH 202	Architecture Design II	6
ARCH 223	History of Art and Architecture III	3
ARCH 252	Structural Systems	3
ARCH 242	Building Construction I	3
1 General Education Requirement		3
		Total 18
Spring term		**Credits**
ARCH 203	Architecture Design III	6
ARCH 231	Contemporary Architecture	3
ARCH 243	Building Construction II	3
1 General Education Requirement		3
		Total 15

Third Year

Summer term		**Credits**
3 General Education Requirements		9
Fall term		**Credits**
ARCH 304	Architecture Design IV	6
ARCH 360	Environment I - Climate Responsive	3
ARCH 313	Digital Tools	3
1 Field or Free Elective or 1 General Education Requirement		3
		Total 15
Spring term		**Credits**
ARCH 305	Vertical Studio I	6
ARCH 353	Environment II - Building Systems	3
ARCH 432	Urbanism	3
1 General Education Requirement		3
		Total 15

Fourth Year

Summer term		Credits
No courses are required. Students can make up for credits missed prior to this semester in general education or free electives.		
Fall term		**Credits**
ARCH 406	Architecture Design V	6
1 Field or Free Electives		3
2 General Education Requirement		6
		Total 15
Spring term		**Credits**
ARCH 407	Vertical Studio II	6
ARCH 461	Professional Practice	3
3 Field or Free Electives		6
		Total 15

Fifth Year

Summer term		Credits
ARCH 572	Professional Training	1 b
Fall term		**Credits**
ARCH 508	Design Thesis I	6
4 Field or Free Electives		9
		Total 15
Spring term		**Credits**
ARCH 509	Design Thesis II	6
3 Field or Free Electives		9
		Total 15

Course Descriptions

Mandatory Core Courses

Each of the following courses is required for the degree in Architecture. Students should pay careful attention to the prerequisite structure, which must be observed. There is a grade average requirement for ARCH 100/101, 202/203, 304/305, 406/407 and 508/509. In order to pass a year, students must obtain a minimum GPA of 2.3 in both design courses

offered in any given year. If the GPA is below 2.3, the student must repeat the design studio(s) in which s/he received a grade below C+. Non-majors must secure the approval of the School and the instructor concerned to enroll in any of the courses listed below.

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It is interdisciplinary in nature bringing ideas and solutions from all disciplines in engineering and architecture. Offered annually.

ARCH 100 Basic Design 6 cr.
The studio introduces students to the field of design and its fundamental principles. It is required for all first year students in Architecture and Graphic Design. The aim of the course is to expose students to basic design principles and train them in design studio skills, including 2D drawing and model-making.

ARCH 101 Architecture Design I Introduction to Tectonics, Space, and Representation 6 cr.
The course introduces the generic issues that influence and shape architectural design, and aims at developing the skills to address them. The studio focuses on such elements as tectonics, design method and representation, human scale, space, form and light, function, place and time. Design is understood as a method of inquiry, through hands- on exercises. With an introduction to basic structural principles, the student acquires fabrication skills that inform architectural expression and encourage inventiveness. The student learns how model-making and drawing are tools that inform the design process and form-making in architecture. Prerequisite: ARCH 100.

ARCH 111 Drawing I 3 cr.
This course is the first in a sequence of representation courses that introduce students to the visual representations of objects and the built environment. Students learn to use basic media, free-hand and manual drafting tools. The course covers geometry, basic drawing, and representation conventions in 2D and 3D, namely orthogonal projections (plans, sections and elevations) and paraline projections (axonometrics and isometrics). Lectures about conventions, methods and historical references to architects and artists' drawings and work supplement the course.

ARCH 112 Drawing II 3 cr.
This course is the second in a sequence of representation courses. It covers more advanced visual representation techniques in architecture and teaches students to work across analog and digital representation tools. The course moves between free hand sketching, perspective methods to more complex 3D and composite architecture drawings. It also introduces students to basic concepts of diagramming and collages as methods for imagining architectural space. Students learn to use 2D digital tools (CAD) in parallel to hand drawing. Lectures about conventions, methods and historical references to architects and artists' drawings and work supplement the course. Prerequisite: ARCH 111.

ARCH 121 History of Art and Architecture I 3 cr.
The first course in the History of Art and Architecture sequence looks at the origins and development of architecture, artifacts and urbanism from prehistoric times through the later medieval period. We move beyond the chronological model to include themes that link art and the cultures that produced it through comparison of objects associated both with the activities of daily life and with the different practices of kingship and religion, especially beliefs and rituals surrounding death, burial and the afterlife. The course focuses on cultures around the Mediterranean rim and beyond. Local field trips are an important component of the class. The course is required for students in the Architecture and Graphic Design programs but is open to all students.

ARCH 122 History of Art and Architecture II 3 cr.
This course, the second in the History of Art and Architecture sequence, focuses on global cultural encounters and exchanges in the post-Medieval period. A thematic and analytic study of major developments in different cultures, it challenges the hegemony of the geographic center. Adaptation, initiative and innovation flow along many different pathways, and in addition to the formal differences amongst visual languages, the course emphasizes processes of cultural production in imperial contexts, their ideological frameworks, and their socio-political significance in writing the history of art, architecture and artifacts. The course is required for students in the Architecture and Graphic Design programs but is open to all students.

ARCH 151 Statics and Mechanics of Solids 3 cr.
The course covers basic physics principles and structural analysis, the strength of materials and their structural properties. It combines lectures and lab work, and imparts a basic understanding of how structural elements of a building work and how they can be manipulated.

ARCH 202 Architecture Design II Materials and Structures in the Natural Environment 6 cr.
The studio focuses on materials and structures in the natural environment. It is taught concurrently with technical courses: Structural Systems and Building Construction I. Through lectures, analyses of precedents, material case studies and different exercises, students investigate structural systems, materials and construction methods, exploring their formal, spatial and aesthetic possibilities and environmental characteristics. Students apply their explorations to integrate structures in a natural environment. Through site visits and studio exercises, students are introduced to site analysis and landscape basics, and begin to address environmental conditions as they relate to climate, topography and vegetation. The course aims at clarifying the dialectic relationship of material, structure, architectural form and site. Prerequisites: ARCH 101, ARCH 241 and a combined grade average of C+ (GPA: 2.3) in ARCH 100 and ARCH 101.

ARCH 203 Architecture Design III Public Architecture in an Urban Context 6 cr.
Building on the previous design courses, Architecture Design III addresses public building structures in urban environments. Through exercises, site visits, lectures and discussions, students are introduced to different themes and methods in understanding architecture in the urban realm. They look at urban areas with reference to historical, cultural and socioeconomic factors. Mapping and abstraction are key tools for design inquiries. Students are asked to develop and integrate program and architectural design in the urban context, with reference to quantitative data on the ground, such as density, traffic, etc. as well as qualitative data such as culture, habits, behavior, etc. Through various exercises they learn about the urban context at different scales ranging from small urban installations to medium-scale buildings with hybrid programs; they also address accessibility, and pedestrian and vehicular circulation. The course balances analytical skills with design interventions. Prerequisite: ARCH 202.

ARCH 223 History of Art and Architecture III 3 cr.
The last course of the History of Art and Architecture sequence surveys the development of Western art and architecture from 1830 to 1945. Thinking beyond the established canon, the course critically addresses the political, aesthetic, institutional and cultural forces that have contributed to shaping this canon. Problems we encounter when we acknowledge that art is a cultural product include the uneasy fit of style-period categories or the isms of art, gender, historical definitions of the avant-garde, the consumption and display of art, and the status of the artist in society. Prerequisites: ARCH 121, ARCH 122 or consent of instructor.

ARCH 231 Contemporary Architecture 3 cr.
The Contemporary Architecture course investigates theory and practice in architecture and urbanism from late Modernism to contemporary times. As a logical continuation of History of Modern Art and Architecture: 1760-1945, the course begins with an overview of major post-World War II architects and architectural movements representing Late Modernism or challenges to the Modern Movement. Rather being a historical and descriptive survey of movements, trends or isms, the course then adopts a thematic and analytical approach to developments from late modernism to contemporary practice. It focuses on philosophies, theories and themes underlying contemporary architectural writings and built works and addressing issues of globalization; place and cultural identity; relationship to history and heritage; relationship to nature and landscape; environmental, social and economic sustainability; use of technology; materials and light; and spatial and formal explorations. Prerequisite: ARCH 223.

ARCH 241 Surveying Regional Architecture 2D-3D 9 cr.
In this fieldwork course, students study and document the traditional and transitional architecture of a given region. On the macro level, the region of interest expands to the Eastern Mediterranean Sea Basin and the Middle East. On a micro level, it covers the sub-regional variations within Lebanon in terms of traditional, transitional and contemporary architecture. The scope of study encompasses different scales of rural and urban settlements. Case studies are generally structured around the investigation of building types, regional variations in architecture, and the study of historical buildings and neighborhoods. Prerequisites: ARCH 112 and ARCH 101.

ARCH 242 Building Construction I 3 cr.
This is the first in a sequence of two courses on building construction materials and methods. Having studied the structural systems and properties of various building materials in the Structures courses, in this course, students focus on materials' properties, methods of construction, assembly systems, and environmental performance and impact of masonry, concrete (cast-in-place and precast systems), steel and wood (different types). Availability and use of regional materials, material extraction, fabrication, erection, craftsmanship and jointing of different materials are addressed. The course also introduces construction sequence, site works, excavations and foundation systems. In addition to including an introduction to detailing the main constituents of the buildings' envelope, the course allows students to get hands-on experience by building scale models of masonry walls, wood frames and steel joints.

ARCH 243 Building Construction II 3 cr.
The second building construction course focuses on building enclosure and finish construction as well as on construction drawings. In the first section, basic principles and components of the building envelope are studied with their environmental performance. Topics include damp-proofing and waterproofing, thermal insulation, exterior wall systems and materials, exterior windows and doors, glazing systems, solar control and shading

devices, and roofing systems. Students learn to design and detail building envelopes that provide protection from water, wind and temperature extremes and to optimize solar control. A wide range of exterior wall systems is explored. The second section of the course covers finish construction; including interior partitions, floor, stairs, wall finishes and suspended ceilings. Materials embodied energy, environmental impact and reuse are also investigated, and selection of "green" materials is discussed. In the third section, students develop the working drawing plans, elevations, sections and details of a small house. Prerequisite: ARCH 242.

ARCH 252 Structural Systems 3 cr.
In this second Structures course, students acquire a deeper knowledge of structural systems as they relate to architectural design. The course explores synergies of form, structures and materials with an emphasis on aesthetics and efficiency. Lectures are combined with lab work to develop an understanding of structures as integral to the creative design process. The course enables students to develop structural design strategies, assume a leading role in the design and construction process and effectively communicate with structural engineers. Numerical calculation methods used are intended for rough estimations of loads and sizes. Prerequisite: ARCH 151.

ARCH 304 Architecture Design IV Environmentally Responsive Architecture 6 cr.
This studio focuses on environmental issues and the integration of green strategies into the design of mixed-use projects with a housing component in natural, rural or urban settings. The studio is taught concurrently with a lecture course on climate-responsive design. Through lectures, analyses of historical and contemporary precedents and vernacular examples, discussions and hands-on exercises, students explore environmentally responsible site development and landscape approaches as well as passive design strategies. They also investigate housing typologies as manifestations of the needs, aspirations and sociocultural characteristics of various groups/ communities. Prerequisites: ARCH 203 and a combined grade average of C+ (GPA: 2.3) in ARCH 202 and ARCH 203.

ARCH 305 Vertical Design Studio I 6 cr.
In Vertical Studios I and II, 3rd and 4th year students join common optional studios in the spring term. Studios are designed to address specific themes relevant to architecture. Inspired by other disciplines, such as art, history, social sciences and technology, students explore new design approaches that encourage lateral thinking and experimentation. Studios provide opportunities to explore different themes ranging from media, structures, installations and heritage to urban, social and environmental issues. Prerequisite: ARCH 304.

ARCH 313 Digital Tools 3 cr.
This course is the third in a sequence of representation courses. With the beginning of the millennium, traces of traditional drawing in architecture have been replaced by digitized models and layouts. From initial design and visual construction to final renderings, digital tools have shifted the way an architecture project is conceived. Software, such as Rhinoceros and 3DMax, have become essential for architecture representation, especially when combined with post-production tools such as Adobe Illustrator, Photoshop or InDesign. This course is aimed towards developing students 3D modeling and visualization skills, as well as providing them with the tools needed to complete the construction, rendering and presentation of architectural ideas. Prerequisite: ARCH 112.

ARCH 432/URPL 632 Urbanism 3 cr.
This is an introductory course to contemporary debates in the field of urban studies within the social sciences and their implications for the practices of architecture, urban design

and urban planning. Special emphasis is placed on understanding processes of place-making (that is, looking at the forces behind the production of space) and the influence of place on its dwellers (that is, seeing how places/spaces influence/dictate how people act). The relevance of these theoretical debates to the local/regional geographic context is closely investigated. Prerequisite: ARCH 231.

ARCH 360 Environment I – Climate Responsive Design 3 cr.
The course addresses sustainability and climate-responsive architecture and site planning. After a brief overview of energy issues as they relate to architecture and urbanism, the course examines the interaction between climate, people and buildings, and presents basic principles of passive design and sustainable site planning. An introduction to climatic parameters and thermal comfort is followed by a study of the elements of sun, wind and daylight as they pertain to passive design, focusing on building form and solar radiation, natural ventilation strategies and daylighting design principles and applications. The course also briefly addresses other sustainable design strategies and includes an overview of active systems (solar, photovoltaic panels, geothermal), water reduction and reuse, green materials and acoustics.

ARCH 353 Environment II – Building Systems 3 cr.
This course is the second environmental systems course. It provides a design-oriented study of environmental control, life safety and building service systems; consisting of electrical, lighting, heating, ventilation, air-conditioning, water and waste, acoustics, fire safety and fire protection, and vertical transportation. The course covers basic principles, applications and performance of environmental control systems, and addresses these systems as they impact building planning and design, and occupant health and comfort. Sustainable design strategies, energy efficiency, optimization of indoor environmental quality and economic soundness are key issues. Prerequisite: ARCH 360.

ARCH 461 Professional Practice 3 cr.
The professional practice course exposes students to the scope and key aspects of design professional practice. In the first part of the course, students investigate the establishment and management of a design-focused practice with emphasis on financial planning, navigating legal and regulatory requirements, marketing strategies and team building, and ethics and professional conduct. Types of practice and professional options after graduation in the national, regional and international realms, as well as prospects for post-graduate education and specialization are also discussed.

ARCH 406 Architecture Design V Comprehensive Design Studio 6 cr.
In this comprehensive design studio, students apply the knowledge and skills acquired in all previous design studios, theory and technical courses. Projects assigned are medium to large-scale buildings, and themes can relate to culture, education, tourism, work, retail and transportation. Projects envisioned are complex building structures with preferably hybrid functions addressing the public domain, circulation, accessibility, life safety, parking, building codes and zoning regulations. Prerequisites: ARCH 305 and a combined grade average of C+ (GPA: 2.3) in ARCH 304 and ARCH 305.

ARCH 407 Vertical Design Studio II 6 cr.
See description of ARCH 305. Prerequisite: ARCH 406.

ARCH 508 Design Thesis I 6 cr.
In this course, students start a year-long design investigation of an architecture issue of their choice and develop a related design thesis. The design investigation must be of a professional caliber that entitles students to graduate and join professional practice as

licensed architects. It is also an opportunity to pursue a comprehensive architectural design process that integrates design research, theoretical paradigms, representational methods, regulatory systems and technical knowledge. Prerequisite: ARCH 407.

ARCH 509 Design Thesis II 6 cr.
Design Thesis is the culmination of undergraduate education in Architecture. This course is the second part of a year-long thesis project. It consists of an architectural design intervention derived and developed from the issues raised and researched in Design Thesis I. Students work independently in a studio setting. Prerequisite: ARCH 508.

ARCH 572 Professional Training 1b.
This is an eight-week professional training course at a recognized architectural design office in Lebanon or abroad. Students are expected to engage in a capacity that ensures they apply their knowledge and acquire professional experience in the field of architecture. Prerequisite: ARCH406.

For Architecture and Graphic Design elective courses see list at end of Graphic Design section.

Minor in Integrated Product Design

Integrated Product Design is an interdisciplinary minor, located at the intersection of design, engineering, business, art, humanities, and social sciences. The minor in integrated product design is open to all AUB students who are interested in expanding their knowledge of design and obtaining a deeper understanding of the design process of goods, systems, and services from research and conceptualization, to design development and prototyping, and to marketing and branding. It is a minor for students who are inspired to become social entrepreneurs to design and develop products that can be implemented and scaled to trigger positive systemic change. Through the minor, students are exposed to a range of design skills and methods, from visualization of ideas to creative problem-solving, and transformative design thinking. They also learn to work with multidisciplinary teams on hands-on projects and in a studio environment.

Students must earn 18 credits to satisfy the requirements for the minor in integrated product design. These are distributed as follows:

1. 6 credits of foundational design skills. Students must select 3 credits in basic design methods courses and 3 credits in visualization courses (see list 1).

2. 6 credits of core product design and development. Students must select 6 credits in product design courses (see list 2).

3. 6 credits of thematic field electives. Students must select 6 credits in two of the thematic areas A, B, C, and D (see list 3).

Students will follow AUB's regulations while pursuing the minor. University minimum requirements for a minor are as follows:

- A minimum of 15 credit hours earned on the basis of regular graded courses (not tutorial or special project type courses) is required for a minor (refer to the requirements of each faculty/school).

- At least 9 credit hours of coursework must be completed at AUB.

- Each minor must have at least 6 credits exclusive to it, 9 credits may be common with the program requirements of the major field(s) of study.
- Minor courses may not be taken on a pass/fail basis at AUB.

List 1: Foundational courses with a focus on basic design, visualization, and prototyping. The student should take 6 credits from this list.

ENMG 664	Introduction to Human-Centered Design	3 cr.
ARCH 100	Basic Design	6 cr.
MECH 201	Computer-Aided Drawing and Design (CADD)	3 cr.
MECH 421	Manufacturing Processes I Pre-requisites: MECH 320, MECH 340	3 cr.
MECH 522	Mechanical CAD/CAE/CAM Pre-requisites: MECH 320, MECH 420 and MECH 432	3 cr.
ARCH 111	Drawing I	3 cr.
ARCH 112	Drawing II Pre-requisite: ARCH 111	3 cr.
ARCH 313	Digital Tools Pre-requisite: ARCH 112	3 cr.
GRDS 111	Drawing	3 cr.
GRDS 141	Computer Graphics	3 cr.

List 2: Core courses with a focus on product design and development. The student should take 6 credits from this list.

MECH 525	Product Design and Development Pre-requisites: MECH 332, MECH 420	3 cr.
MECH 510	Design of Thermal Systems Pre-requisites: MECH 410L, MECH 412 and MATH 251	3 cr.
ARDS 400	Systems Thinking Pre-requisite: ENMG 698E	3 cr.
ENMG 663	Product Design and Development	3 cr.
BMEN 501	Bioengineering Design Fundamentals	3 cr.
CHEN 571	Chemical Product Design Pre-requisite: CHEM 470	3 cr.
GRDS 305	Graphic Design V Pre-requisite: GRDS 304	6 cr.
MECH 502, EECE 502, INDE 502, CHEN 502, CIVE 402	Approval of advisor	3 cr.

List 3: Field electives. The student must take 6 cr. From at least two categories (A-D).

Category A

INDE 412	Engineering Entrepreneurship	3 cr.
ARCH 068	Design Innovation and Entrepreneurship	3 cr.
ENMG 654	Technology-Based Entrepreneurship	3 cr.
ENMG 655	Management of Technology	3 cr.
ENMG 656	Management of Technological Innovations	3 cr.
MKTG 312	Consumer Behavior Pre-requisite: MKTG 306	3 cr.
MKTG 311	Applied Market Research	3 cr.
DCSN 310	Operations and Process Management	3 cr.
DCSN 340	Supply Chain Management Pre-requisite: DCSN 310	3 cr.
EMBA 521	Digital Marketing	3 cr.
ENTM 320	Social Entrepreneurship	3 cr.
ENTM 220	Entrepreneurship and Business Planning	3 cr.
INFO 220/ MKTG 220	Electronic Marketing Pre-requisites: MKTG 210, INFO 200	3 cr.
FINA 211	Introduction to Finance for Engineers Pre-requisite: ACCT 210	3 cr.
INFO 227/ MKTG 227	Social Media in Digital Management Pre-requisite: MKTG 210, Permission of the instructor for non-OSB students	3 cr.
ENTM 230	Decision-Making Skills for Entrepreneurs Pre-requisite: MNGT 215	3 cr.
MKTG 234	Marketing for Social Change Pre-requisite: MKTG 210 (or equivalent). Permission of instructor for non-OSB students	3 cr.
ENTM 270	Launching a New Venture Pre-requisite: MNGT 215, FINA 210	3 cr.

Category B

MECH 617	Smart Materials and Structures	3 cr.
MECH 631	Micro Electro Mechanical Systems (MEMS) Pre-requisite: MECH 430	3 cr.
MECH 632	Structural Health Monitoring Pre-requisites: MECH 320, MECH 430	3 cr.
MECH 798C	Sustainable Materials	3 cr.
MECH 634/ BMEN 608	Biomaterial and Medical Devices Pre-requisite: MECH 340 or consent of instructor	3 cr.

ARCH 040	"Making It": Models and Prototypes of Complex Structures	3 cr.
ARCH 060	Algorithm an Iteration	3 cr.
ARCH 063	Do It, Then Fix It As You Go	3 cr.
ARCH 069	New Territories	3 cr.
GRDS 040	3D Animation	3 cr.
GRDS 043	Advanced Digital Animation	3 cr.
EECE 625/425	Embedded and IOT Systems Pre-requisite: EECE 321	3 cr.
EECE 652	Web Server Design and Programming	3 cr.
EECE 680	Antennas for Wireless Communications Pre-requisite: EECE 380	3 cr.
EECE 684	Microwave Engineering	3 cr.
EECE 487/687	Radio-Frequency Integrated Circuit (RFIC) Design Pre-requisites: EECE 380, EECE 311	3 cr.
EECE 685	Radio Frequency (RF) Circuits Design Pre-requisites: ECE 311, EECE 340, EECE 380	3 cr.
EECE 686	Radio-Frequency (RF) Transceiver Design Pre-requisites: EECE 311, EECE 380	3 cr.
EECE 687/487	Radio-Frequency Integrated Circuit (RFIC) Design Pre-requisites: ECE 380, EECE 311	3 cr.
EECE 697/ MECH 646	Wheeled Mobile Robotics	3 cr.
EECE 698/ MECH 650	Autonomous Mobile Robotics Pre-requisites: EECE 230, EECE 312, and MECH 436; or EECE 230 and EECE 460	3 cr.
CHEN 619	Sustainability Science: Human and Environment Interaction	3 cr.

Category C

GRDS 062	Brand Inc.	3 cr.
MKTG 225	Strategic Brand Management Pre-requisites: MKTG 210. Students cannot receive credit for both SOAN 231 and MKTG 225 or both SOAN 235 and MKTG 225	3 cr.
MKTG 210	Principles of Marketing Co-requisite ENGL 204	3 cr.

Category D

GRDS 033	Pre-Brand: A History of Identity Design	3 cr.

GRDS 331	Introduction to Visual Theory	3 cr.

Minor in Urban Studies

The minor in Urban Studies is open to all AUB students who are interested in expanding their knowledge of the contemporary opportunities and challenges posed by the ongoing transformations of the natural and built environments as the world shifts to a "planetary" urbanization. Through the minor, students familiarize themselves with a range of contemporary debates discussing the implications of urbanization across disciplinary fields. They also strengthen their command over some of the methods and tools used in social and environmental sciences, humanities, and urban planning and design to analyze urbanization processes.

In order to satisfy the requirements of a minor in urban studies, a student must earn 15 credits of coursework, as described below.

As per AUB regulations, (1) at least 9 credit hours of coursework must be completed at AUB, (2) at least 6 credits should not be taken to satisfy another minor, (3) none of the courses can be a P/F course, and (4) students must complete at least 60 credits at the sophomore level or higher, attain a minor GPA of 2.3 or more to satisfy the requirement of the minor, and maintain a cumulative GPA of more than 2.3 to be eligible to apply for the minor.

Students enrolled in Architecture, Engineering or Landscape Architecture who hold a minor in urban studies qualify for an advanced standing if they apply for the Master of Urban Planning and Policy (open to all students with a first degree in engineering, architecture, landscape, and/or the social sciences) and the Master of Urban Design (open to all students with a first professional degree in architecture and/or landscape architecture).

The minor in urban studies is administered by the Coordinator of the Master in Urban Planning and Policy & Master in Urban Design programs.

Course Requirements

In order to obtain a minor in urban studies, students must complete fifteen credits distributed as follows:

- Two courses in the general theory/methods framework are required:

ARCH 432/URPL 632	Urbanism (3cr.)
URPL 630/SOAN 210	Research Methods (3cr.)

- Register for the 0-credit seminar City Debates once (URPL 660).
- At least one course about the interaction of urban studies with a professional field is required such as the below (or equivalent, approved by the Program Coordinator):

Design & Landscape

URDS 632	From Urban Design to Landscape Urbanism
LDEM 301	Urban Greening

LDEM 302	Green Infrastructure for Resilient Landscapes and Cities

Urban Planning

URPL 631	Introduction to Planning Theory and Policy

Environmental Studies and Management

CIVE 656	Environmental Impact Assessment
CIVE 601	GIS and Geospatial Data Modeling

Urban Transportation and Infrastructure

CIVE 661	Urban Transportation Planning I
CIVE 666	Public Transportation

- At least one of special-topics theory courses (3 credits) that intersect directly with the study of the city in the School of Architecture and Design such as the below (or equivalent, approved by the Program Coordinator):

URPL 621	Urban Form and its Formation
URPL 637/ARCH 036	Illegal Cities
URPL 664	Urban Land Use Planning
URPL 665/ARCH 065	Development and Planning Policies
URPL 669	Building and Planning Codes
URDS 624	Hybrid Beirut: Morphogenesis of the Contemporary City
URDS 632	From Urban Design to Landscape Urbanism
URDS 634	The Contested Urban Heritage of Cities in the Arab World
ARCH 015	Micro Infrastructures

- One of the following courses (3 credits) may also be taken towards the minor in urban studies (in addition to equivalent courses relevant to urban studies, as approved by the program coordinator):

HIST 263	Islamic Cities, 600-1500
CHLA 205	Ancient, Medieval, Islamic, and Renaissance Civilizations
SOAN 220	City and Society
SOAN 216	Hands-On Anthropology
SOAN 221	Political Anthropology
SOAN 223	Social Inequality: Conflict and Consensus
FINA 232	Real Estate Management
FINA 234	Real Estate Finance and Investment

Graphic Design

Mission Statement

The undergraduate program in graphic design offers a professional degree with a well-rounded scope covering the multiple practice areas of the discipline. The curriculum focuses on solid training in the theoretical, practical and technical aspects of graphic design, while promoting a socially responsible practice and awareness of both local and international developments in the field. The goal of the program is to produce graduates with expert design proficiencies, grounded in historical knowledge, who are capable of adapting graphic and visual tools to the changing demands of the design industry. Students develop intellectual and critical thinking skills and contribute to aesthetic and technological innovations by generating ideas in response to a wide range of design challenges. The program is committed to the role design plays in the multicultural and multilingual contemporary regional context, and provides a creative teaching and learning environment to address these issues.

Program Description

The Graphic Design Program is comprised of a total of 139 credit hours normally taken over four years. The curriculum is structured as follows: 1) Two foundation years, first and second, with core requirements in design, typography, representation techniques, digital media and history courses, which offer students basic skills and knowledge in design and related areas. 2) One advanced year, third year, with core requirements in advanced design, digital media and theory courses, reinforced by the field electives and General Education requirements. 3) Final year, fourth year, with a one-year design project and advanced electives. In order to pass a year, students must obtain a minimum GPA of 2.3 in both design courses offered in any given year. If the average is below C+, the student must repeat the design studio(s) in which s/he received a grade below C+.

The degree requirements in Graphic Design consist of the following:

- 94 credit hours of mandatory core courses
- 15 credit hours of approved ArD/MSFEA field electives:
    - 3 credit hours in Category A: Representation
    - 3 credit hours in Category B: History, Theory and Methodology
    - 3 credit hours in Category C: Digital Media, Typography and Professional Practice
    - 6 credit hours: choice between A, B & C
- 3 credit hours of free electives in consultation with the academic advisor

To meet the AUB General Education requirements (27 credits must be taken outside the department):

- 6 credit hours of English: English 203 and English 204
- 3 credit hours in Understanding Communication (Arabic)

- 9 credit hours of approved electives in Cultures and Histories, including 6 credit hours satisfied by ARCH 121 and ARCH 122
- 3 credit hours of approved elective in Human Values
- 6 credit hours of approved electives in Societies and Individuals, including 3 credit hours satisfied by GRDS 331
- 9 credit hours of approved electives in Understanding the World and Quantitative Reasoning with at least 3 credits from each. One of the Quantitative Reasoning courses has to be CMPS 207
- 3 credit hours of an approved elective in Community Engaged Learning, satisfied by GRDS 203
- Additional thematic requirements: One of the GE courses above has to cover the theme of History of Ideas (CHLA designation), and one course has to cover the theme of Social Inequalities

Curriculum for the Degree of Bachelor of Fine Arts in Graphic Design

First Year

Fall term		**Credits**
ARCH 100	Basic Design	6
GRDS 111	Drawing	3
ARCH 121	History of Art and Architecture	3
ENGL 203	Academic English	3
1 General Education Requirement		3
		Total 18
Spring term		**Credits**
GRDS 101	Graphic Design	6
ARCH 122	History of Art and Architecture II	3
GRDS 151	Typography I	3
GRDS 141	Computer Graphics	3
1 General Education Requirement		3
		Total 18

Second Year

Summer term		**Credits**
GRDS 212	Photography	3
2 General Education Requirement		6
		Total 9

Fall term		**Credits**
GRDS 202	Graphic Design II	6
ARCH 223	History of Art and Architecture III	3
GRDS 252	Typography II	3
GRDS 213	Illustration	3
		Total 15
Spring term		**Credits**
GRDS 203	Graphic Design III	6
GRDS 224	History of Graphic Design	3
GRDS 242	Motion Graphics	3
GRDS 214	Printmaking	3
		Total 15

Third Year

Summer term		**Credits**
2 General Education Requirements		6
1 General Education Course: CMPS 207		3
		Total 9
Fall term		**Credits**
GRDS 304	Graphic Design IV	6
GRDS 331	Introduction to Visual Theory	3
GRDS 361	Professional Practice	3
GRDS 343	Interaction Design I	3
		Total 15
Spring term		**Credits**
GRDS 305	Graphic Design V	6
GRDS 344	Interaction Design II	3
2 Field or Free Electives		6
		Total 15

Fourth Year

Summer term		**Credits**
GRDS 462	Approved Experience	1 b
Fall term		**Credits**
GRDS 406	Final Project Research	4
2 Field or Free Electives		6
1 General Education Requirement		3
		Total 13
Spring term		**Credits**
GRDS 407	Final Project Design Research	6
2 Field or Free Electives		6
		Total 12

Course Descriptions

Mandatory Core Courses

ARCH 100 Basic Design 6 cr.
See Architecture section.

ARCH 121 History of Art and Architecture I 3 cr.
See Architecture section.

ARCH 122 History of Art and Architecture II 3 cr.
See Architecture section.

GRDS 101 Graphic Design I 6 cr.
This is an introductory studio on graphic design methods and processes where fundamentals of visual communication are addressed. The studio starts with basic investigations in form making, and gradually moves on to cover more complex components of graphic design dealing with the construction of meaningful visual messages and the organization of information as well as the dynamic interaction of color and its applications. Prerequisite: ARCH 100.

GRDS 111 Drawing 3 cr.
This studio course is an introduction to visual representation. Students learn drawing skills and pictorial conventions, and consider the historical specificity and contemporary relevance of such skills and conventions.

GRDS 141 Computer Graphics 3 cr.
This course introduces students to digital imaging techniques through computer software learning. Students are introduced to the Mac Operating System platform and move on to cover basics of industry standard software from vector-based programs (such as Adobe Illustrator) to pixel-based image creation and manipulation (such as Adobe Photoshop), while addressing desktop publishing design programs (such as In-Design).

GRDS 202 Graphic Design II 6 cr.
This studio focuses on principles of identity design through investigations in symbolic graphic representation, logo design, and the development of identity systems using various modes of image making and typography. Prerequisites: GRDS 101 and a combined grade average of C+ (GPA: 2.3) in ARCH 100 and GRDS 101.

GRDS 203 Graphic Design III 6 cr.
This studio addresses graphic design as a cultural practice. It focuses on processes of visual communication where issues of meaning production and exchange are emphasized and critically examined in their relation to particular social contexts and localities. Methodologies of arriving at meaningful graphic solutions—image-type relationships, visual narratives, info-graphics and complex information organization— are explored through diverse theme-based projects and loose-sheet printed formats of public dissemination (posters, book covers, leaflets, maps). Prerequisite: GRDS 202.

GRDS 212 Photography 3 cr.
A course aimed at providing graphic design students with a thorough understanding of the basic techniques and aesthetics of both black and white and color photography through hands-on assignments and darkroom practice.

GRDS 213 Illustration 3 cr.
This course introduces students to illustration techniques and styles with the aim of strengthening their representation and visualizing skills to enrich the graphic design process and its outcomes. Assignments cover various themes while exploring a wide range of media and approaches. Prerequisites: GRDS 111.

GRDS 214 Printmaking 3 cr.
Basic printmaking covers traditional printmaking techniques such as lithography, etching, silkscreen and woodcut. Students acquire a foundation and understanding of print/printmaking techniques and processes through project-based exercises creating unique impressions on various surfaces.

ARCH 223 History of Art and Architecture III 3 cr.
See Architecture section.

GRDS 224 History of Graphic Design 3 cr.
The course will go through key moments in graphic design history surveying some of the most significant periods, dominant styles and influential designers until the present day. The course is conceived of thematically with the intention to address the conceptualization of Graphic Design as a discipline directed by various interpretative inquiries into the History and Theory of graphic communication. The course is formulated in a way that enables students to take part in the current debate around graphic design theory and practice. Prerequisite: ARCH 223.

GRDS 151 Typography I 3 cr.
The course introduces students to Arabic and Latin type and typography, providing the necessary historical, theoretical and technical knowledge, in combination with applied exercises and projects that aim to enrich the graphic designer's typographic skills. The course is focused on the micro aesthetics of typography and its communicative potential; it begins with building an understanding and sensitivity to the formal and structural characteristics of letters, type styles and related classification, and gradually moves to basics of choosing, combining and working with type to enhance composition, meaning and readability.

GRDS 252 Typography II 3 cr.
The course is a sequel to Typography I (Typography 1 is now GRDS 151). It builds on the basic skills and knowledge already acquired to move to more advanced applications of Arabic and Latin typography for the design of different kinds of text-based information. New aspects are investigated while maintaining attention to the aesthetic and communicative potential of typography: type setting, color, texture, direction, flow, readability and context. Prerequisite: GRDS 151.

GRDS 304 Graphic Design IV 6 cr.
The course covers the design of printed publications in their various formats and for various audiences, ranging from mass media (newspapers, magazines, etc.) to special interest publications (fanzines, limited edition books, etc.), where processes of art direction and the design of layout systems for multi-page prints will be covered. While learning to materialize editorial concepts and content into graphic form, students also develop advanced skills in organizing complex information and devising appropriate compositional, typographic and image solutions. Prerequisites: GRDS 203 and a combined grade average of C+ (GPA: 2.3) in GRDS 202 and GRDS 203

GRDS 305 Graphic Design V 6 cr.
The course covers package design, installations and signage art, and an interactive process between them. Research and analysis are conducted in each individual project. Projects are distributed into experimental and commercial 'real' situation types. Students will develop an understanding and ability to manipulate two-dimensional graphics to three dimensional objects and environments; understand the needs of the market through market research; apply regulations where appropriate; carry the given projects from concept development to the final stage (real situation scenario); and experiment with acquired (design) language and vocabulary. Prerequisite: GRDS 304.

GRDS 331 Introduction to Visual Theory 3 cr.
An introduction to the various debates concerning visual representation aimed towards an investigation of the visual as a social practice and as part of an aesthetic discourse.

GRDS 242 Motion Graphics 3 cr.
This course provides students with the basics of designing for time-based media and the moving image. The course covers animation in its various forms, studying the process in depth from animation principles to concepts and story boarding, to the final output edited with the soundtrack. Students will be exposed to and use various techniques of animation, from the classical hand drawn frame by frame animation, to experimental Stop Motion Animation, and computer-based motion graphics title sequences, infographics and TV branding. Prerequisite: GRDS 141.

GRDS 361 Professional Practice 3 cr.
This course prepares students to face the real world of the graphic design profession. Lectures, readings and field research along with hands-on assignments are given to assist students in writing their CVs and preparing their portfolios, learning about basic business practices (public relations, client handling, invoicing and billing, time management, work flow, etc.), in addition to building knowledge about pre- press production and production techniques essential to the design practice. Prerequisite: GRDS 203.

GRDS 343 Interaction Design I 3 cr.
In this course, students learn to design for interactive media while building on the skills acquired in previous design studios. The course covers the principles, methods and tools to plan, organize and implement interactive content ranging from interface design to digital publishing and best practices in typography, navigation, and information design. Students acquire an understanding of structuring and representing information, properly integrating elements of text, image (still and moving), audio, and video to create and deliver different interactive experiences. The course also covers the foundation of font-end programming language and software used by the industry. Prerequisites: GRDS 141 and GRDS 242.

GRDS 344 Interaction Design II 3 cr.
This course provides students with practical knowledge and implementation of user experience design. It focuses on the principles of human-centered design and interaction, the interface between humans and technology, understanding and defining user behaviors, designing for multiple platforms and multi-sensory experiences. Students explore the process of user research, prototyping concepts, usability testing, evaluation of multimedia, accessible and inclusive design. They acquire knowledge and hands-on-experience by designing for different user experiences, including interfaces (screens), systems, products and spaces. Prerequisites: GRDS 242 and GRDS 343.

GRDS 406 Final Project Research I 4 cr.
In this course, students start a year-long design investigation of a research topic and a

project of their choice. The process begins by submitting a proposal in which they identify the project's design statement(s)/question(s), define its framework, and set its aims. Throughout the term, students, with the guidance of a panel of advisors, will conduct the necessary research, reflection, sketching, and experimentations that would enable them to refine their initial proposals, respond to its questions, argue their position and, accordingly, arrive at a well-defined design concept statement and a concrete design project proposal. The work will be synthesized in a dossier of research and design experimentations to be submitted at the end of the Fall semester, allowing students to move to the design implementation phase in the following Spring. Prerequisites: GRDS 304 and GRDS 305, and a combined average of C+ (GPA: 2.3) in GRDS 304 and GRDS 305.

GRDS 407 Final Project Design Research 6 cr.
This is the second half of a year-long design project and the culmination of the design studio training. Students integrate and synthesize acquired knowledge and skills, and elaborate, through concrete design experimentation and implementation, the design proposal developed in GRDS 406 with the aim of arriving at a completed graphic design output by the end of the term. Students work independently and in consultation with a chosen advisor from the faculty. Work in progress is presented and discussed with a panel of advisors over the course of the term. The completed projects are presented for evaluation to a jury of faculty members and invited professionals. Prerequisite: GRDS 406.

GRDS 462 Approved Experience 1 b,
This is an eight-week professional training period at a recognized graphic design studio or graphic design department within a web design, television station, advertising agency, publishing house or other approved workplace in Lebanon or abroad. The training should ensure students apply their knowledge and acquire professional experience in the field of graphic design.

For other mandatory core courses such as ARCH 121, ARCH 122 and ARCH 223, please refer to the Architecture core course descriptions.

ARD Elective Course Offerings

The elective courses in the Department of Architecture and Design are distributed into three main categories and are subject to change as new electives are introduced every year. Some electives are open to students in all faculties.

Category A: Representation (ARCH 01 and GRDS 01).

Category B: History (ARCH 02 and GRDS 02) and Theory (ARCH 03 and GRDS 03).

Category C: Technology (ARCH 04), Engineering (05), Professional Practice (ARCH 06, GRDS 06), Digital Media (GRDS 04) and Typography (GRDS 05).

Electives are chosen in consultation with the assigned advisor and in accordance with the load distribution.

Category A: Representation

ARCH 010 Photography 3 cr.
This course aims at providing architecture students with a comprehensive understanding of the basics of black and white and color photography, its techniques and aesthetics. Students learn how to use their cameras and light meters and are taught, through hands-on

practice, the fundamentals needed in traditional black and white printing in the darkroom. The course includes slide lectures and discussions around the works of classic masters and contemporary experts of the medium, field trips, as well as presentations by well-established photographers specializing in architectural photography.

ARCH 011 Imaginary Landscapes: Utopia and Architecture 3 cr.
Although utopia does not belong to a particular field of research, it often relates to architecture, representing a delicate discrepancy between 'ideals' and 'space.' It has always been the concern of architects and designers to imagine utopias, so much so that the history of architecture may no longer ignore this literature and abundant work that relates the sociopolitical and economic field to spatial manifestations of desires and dreams.

ARCH 015 Micro Infrastructure 3 cr.
Micro Devices is a course that teaches visualization and diagramming as analytical methods to pursue research on a specific local infrastructural problematic (water, transportation, energy, etc.). The aim is to rigorously tackle that infrastructural issue through mapping and diagramming to produce a visual pamphlet while proposing hybrid and speculative design interventions.

ARCH 017 Remaking our World: Cities and Cinema 3 cr.
This course examines how shifts in urban form and plans for development or reconstruction give rise to cinematic representations. We will also look at how discourses of cinema and their production and design process affect architecture, urbanism and our experiences in the city. In addition, through a workshop, we will get our hands dirty with cameras and experiment with a few short clips ourselves.

ARCH 018 Counter-FIction as Narrative 3 cr.
The course introduces counter-fiction as a productive method of exercising design imagination and an alternative tool for design realization and presentation. Students will use museum collections and archives as a context to develop counter-fictional plots based on relevant historic events. These reimagined plots will be explored visually across different media. The course is divided into three parts: method development, visual interpretation and research, and project development and presentation. The course is a workshop and seminar, and open to architecture, graphic design and other students.

GRDS 010 Digital Illustration 3 cr.
This course focuses on developing technical proficiency with digital tools to build an advanced understanding of illustration principles. The class covers essential skills required for working with illustration, ranging from character and environment design to translating complex ideas with maximum clarity and audience engagement. Additionally, this course will emphasize a methodical sketching process that integrates traditional drawing techniques with digital solutions to better prepare students for working with illustration in the professional practice.

GRDS 012 Silkscreen 3 cr.
This course teaches students the fundamental principles of silkscreen printing and to be creative in their approach to printmaking. Silkscreen, one of the most versatile and widely used methods of printmaking, will be fully explored in this studio class through demonstrations and self-initiated projects. Students will be encouraged to experiment with multiple techniques and combinations of traditional and contemporary methods of serigraphy, and search for solutions that best translate the nature of their work to the medium. Prerequisites: GRDS 214, ARCH 112 or FAAH 202; and FAAH 234.

GRDS 014 Engraving and Etching 3 cr.
This course is an exploration of intaglio printmaking processes. It covers the non-acid methods such as engraving, dry point and mezzotint and acid methods like etching (hard and soft ground) and aquatint. This studio art course covers the needed technical information; however, emphasis will not only be placed on the technical production of art works but also on the content and concepts of printmaking. Prerequisite: GRDS 214, ARCH 112 or FAAH 202.

GRDS 015 The Artist Book 3 cr.
This course examines how books have become a recognized way of making art and introduces students to techniques of making books-by-hand through incorporating traditional techniques like letterpress, etching, relief, stenciling, stamping and photo etching to make texts and images. This course also introduces students to different techniques of book-binding in order to produce an artist book. Prerequisite: GRDS 214 or FAAH 202.

GRDS 016 Advanced Photography 3 cr.
This course engages students with artistic photographic practice by encouraging them to make photographs that respond to and challenge issues raised through class discussions and assigned readings. While focusing on contemporary aspects of photography, students are expected to intensively produce their own works with the objective of developing their individual visual language. Weekly practical assignments are designed to push students to explore questions in current photographic practice as they relate to the history and development of the medium. A conversation on photography as a thought process is emphasized through readings, class presentations and slide lectures, in parallel to a visual and conceptual exploration through practical assignments. Prerequisite: GRDS 212.

GRDS 017 Elastic : An Intro to Generative Art 3 cr.
The class introduces students to coding through the language of Processing, an open-source “programming sketchbook”: They will learn to draw static images and transform them into moving and interactive compositions; they will input sounds or other stimulus, and create the recipes for them to become visuals. All the while, they will be placing these experiments within a theoretical framework of abstraction, autonomy, and algorithmic creation. What are the similarities between programming and the formative centuries of Islamic Art? early 20th Century art movements? Mid-Century art movements? This two- fold approach of practice and history hopes to form a well-rounded context of the skills acquired and hence a critical stance on the programming tool.

Category B: History and Theory

ARCH 020/URPL 626 Interwar Urban History 3 cr.
This course explores the momentous urban transformations across the world during the interwar, a period when cities became more populous, complex, sophisticated, and contested than ever. From Berlin and Rio de Janeiro to Beirut and Calcutta, cities went through major physical and social transformations during the interwar. In addition to the advent of international modernism in architecture, the emergence of urban planning as a discipline shaped urban forms and infrastructures in radical ways. This course embraces a global urban history approach, examining the parallel and divergent ways in which cities responded to the political, economic, and social challenges of the interwar. There are three modules in this course. The first involves contestations over cities, focusing on the issues of how political struggles crystallized in urban spaces; how the nascent notions of urban rights mobilized masses into action; and the role of heritage in a modern city. The second module is about physical interventions in cities and the disciplinary apparatuses that shaped them. This module explores the institutionalization and dissemination of urban planning;

infrastructural modernization; housing; and real estate. The third module moves on to the realm of representation. It focuses on how cities figured in some of the notable literary, artistic, and cinematic works of the interwar.

ARCH 020A Spatial Politics of Revolution: from Tehran to Beirut 3 cr.
Tehran and Beirut have their differences in size, population, geography, politics, economy, and urban form. They have both had their fair share of conflict and upheaval. Both cities suffer from a lack of basic services, extreme pollution, congestion, and a socio-economic divide that manifests itself in all aspects of daily life and result in perpetual social upheaval and unrest. This seminar builds on the premise that urban form is a vessel for social norms and cultural practices. Once this urban form is removed, new norms and practices must be created, which can lead to social unrest and upheaval. Examples of this abound in modern history, some of which have resulted in successful revolutions.

ARCH 021/URPL 622 Istanbul: From Imperial Capital to Global Metropolis 3 cr.
This is a thematic course on the architectural and urban history of Istanbul from the mid-fifteenth century up to the present. The course explores the built environment of Istanbul at different historical moments focusing on such themes as imperial ideology, patronage, cross-cultural encounters, gender, multiculturalism, nationalism, globalization, informal settlements, and gentrification.

ARCH 024/URDS 624 Hybrid Beirut: Morphogenesis of the Contemporary City 3 cr.
Looking East and West, Beirut has developed its own response to early modernization through the assimilation of Western urban models and architectural trends. The resulting cultural hybridity and townscape diversity can only be understood by exploring the transitional years of the city formation and transformation from a medieval Arab- Islamic town in the 1840s to a showcase of the French Mandate in the Levant in the 1920s and 30s. This course is an attempt to read contemporary Beirut through its recent colonial past, and to trace the continuity and change in its social, economic and cultural conditions as mirrored in the urban structure and building typologies.

ARCH 027 Regional Architecture: Lebanon 3 cr.
This course presents various aspects (mainly physical and social) of regional architecture in Lebanon, covering a period of over a century and a half (1970-1820). It introduces students to various typologies of local architecture, based on case studies of the city of Beirut as well as other rural areas in Lebanon. It also examines the importance of heritage architecture in shaping urban neighborhoods and socio-spatial practices and introduces urban renewal strategies in areas facing various forms of dilapidation.

ARCH 028 Generative Tropes of Contemporary Architecture 3 cr.
At the cusp of a new digital era, that of the parametric, laden with scripted form and built with a combination of digital and manual fabrication tools, this seminar will consider the production of architecture in the past two decades in search of formal tendencies– tropes or systems— that have been repeatedly utilized in the production of contemporary architecture. By categorically identifying these ‘tropes,’ the overarching pedagogical agenda of this seminar is to enable students to develop tectonic and formal literacy. The first part of this seminar will involve a survey of contemporary architecture in order to identify and categorize recurring formal tropes while introducing students to a thematic lexicon in contemporary architecture. The second part of the seminar will include projective and analytical diagramming of select buildings in order to identify part-to- whole relationships as generative tools in production of contemporary architecture while investigating the possibilities of genealogical relationships within the categories.

ARCH 031 On Housing 3cr.
The course will expose students to housing typology, the study of housing types, through the intensive use of drawing as a critical tool of analysis and representation. Housing types will be analyzed using key local and global case studies drawn from the histories of architecture. Types are understood as distinct architectural inventions that are open to change and mutation. Questions related to the shifting boundaries between private and public, changing demographics, work/life patterns, climatic response and affordable housing will be addressed through the transformations of type.

ARCH 032/URDS 634 Contested Urban Heritage: Reconstructed Cityscapes 3 cr.
The seminar focuses on urban heritage and the politics of its identification, conservation and reproduction in relation to processes of nation building and postwar reconstruction in the Arab World. The principal theoretical position recognizes heritage as an intrinsically contested notion. The seminar is interdisciplinary in its approach and aims at understanding urban heritage, not only as a historical product, but also as a negotiated entity reproduced every day through the dynamics of city life; social, economic and political. Class discussions are set against theoretical works that include Bourdieu's Field of Cultural Production, Boyer's City of Collective Memory, Barthes' Semiology and the Urban, Lefebvre's Production of Space, Hewison's Heritage Industry and Hobsbawm's Invention of Tradition.

ARCH 033 Building Texts 3 cr.
The course investigates how the design of identities evolved in response to distinctive industrial, corporate, cultural and political sectors of operation, how it behaved independently across separate historical contexts, and how divergent trends ultimately converged into a homogeneous model built around the concept of the brand, deployed today to uniquely distinguish everything from business services to ideological views. Students will be exposed to and get to research the work of seminal identity designers/studios and landmark identity design programs, and examine cases of a less iconic nature that challenge common generalizations about the practice. Alongside this historical investigation, students will be introduced to critical viewpoints around the practice of identity design by examining a body of literature comprising key texts on the subject.

ARCH 036/URPL 637 Illegal Cities 3 cr.
The seminar is designed as an introduction for students enrolled in architecture, urban planning and policy, and urban design to the ongoing debates about the relationship between law and the building process, specifically by looking at its actual materialization in illegal/informal settlements. It is based on a combination of lecture/seminar sessions in which various theorizations of the city/law nexus are explored and on field studies/ class discussions in which the applications of these theories are investigated using a local case study.

ARCH 037 Cities After War 3 cr.
This course explores cities after war by investigating the evolution of reconstruction interventions on devastated landscapes in the US, Europe and the Middle East from WWI until the present. The focus will be on Lebanon as a primary laboratory of postwar reconstruction in the 1990s and 2000s, from which to explore, evaluate and generalize. The two poles of investigation are: morphologies of destruction and dialectics of reconstruction, emphasizing four generic geospatial contexts: 1) urban central district restoration, 2) suburban neighborhood rebuilding, 3) refugee camp reconstruction and 4) rural landscape recovery.

GRDS 030 Turning Towards Conflict 3 cr.
This course inquires how we, as artists, designers, writers and makers, can critically, meaningfully and admittedly leisurely turn towards conflict. It is a seminar class in the

history/theory category. It will therefore develop from student-led presentations and in-depth discussions of a complex set of overlapping topics: aesthetics and politics, poetics, representations of violence and other relevant themes that will organically emerge throughout the term based on the students' research interests.

GRDS 033 Pre-Brand: A History of Identity Design 3 cr.
The course investigates how the design of identities evolved in response to distinctive industrial, corporate, cultural and political sectors of operation, how it behaved independently across separate historical contexts, and how divergent trends ultimately converged into a homogeneous model built around the concept of the brand, deployed today to uniquely distinguish everything from business services to ideological views. Students will be exposed to and get to research the work of seminal identity designers/studios and landmark identity design programs, and examine cases of a less iconic nature that challenge common generalizations about the practice. Alongside this historical investigation, students will be introduced to critical viewpoints around the practice of identity design by examining a body of literature comprising key texts on the subject.

Category C: Technology, Professional Practice, Digital Media, Typography and Urban Studies

Technology

ARCH 040 "Making It": Models and Prototypes of Complex Structures 3 cr.
Design and technology studies in schools of architecture are based on the making of things, how they perform in the environment, the experience of the results and their cognitive interpretation. The scientific knowledge and technical expertise available for architecture are extensive and their rate of change is substantial. The course seeks to develop the ability to learn how to learn, a vital necessity for innovation. The teaching focus is on craftsmanship, innovation, conceptual and lateral thinking, new technologies, construction, interdisciplinary work and collaboration with industries.

ARCH 041 Lighting Design 3 cr.
The course is one of the requisite tools of design. An architect or environmental designer has the ability to render the architectural form with light and to use lighting distribution, intensity, color and modulation to conceive a desired effect. Additionally, light can set the mood for a space – a critical step in the design process.

ARCH 042 Collaborative Research Workshop 3 cr.
This course operates as an intensive multidisciplinary digital design workshop, aiming at engaging undergraduate students in a lab-based research environment. It aims at forging collaborative research projects among faculty and among students at AUB, linking art, craft, engineering, science and technology with design. The course will engage in experimentation with materials and technology to develop collaborative projects that can impact the built and human environment, intersecting research methods with digital fabrication techniques The outcome of the course will be to produce a common physical outcome either as a built 1:1 scale intervention or as a physical prototype. Prerequisite: Senior standing or consent of instructor(s).

ARCH 043 Assembling It All 3 cr.
This course teaches students how to develop innovative Assemblies that allow the creation of advanced Architectural Facades, Envelopes, Roofs. The course bases itself on the knowledge acquired by the students in the two preceding Building Construction courses, about a buildings' materials, construction typologies and their detailing. It aims at advancing the students design and detail creation skills and know-how by teaching them how to

use, adapt, modify and re-assemble building parts to create custom tailored Assemblies of building envelopes to respond to specific conditions and design desiderata. To do so, the course analyzes detailed Assemblies of Envelopes made of various materials: Precast Concrete, GRC, Metal skins, Meshes, Glass and Polymer Assemblies in addition to detailed Assemblies for roofs clad with Metal, Glass, Polymers.

Architecture Professional Practice

ARCH 060 Algorithm and Iteration 3 cr.
Using Grasshopper/Rhino 3D as the main software platform, the course explores the concepts, tools and ways in which parametric programming can lead to greater integration of concept and execution in architectural design.

ARCH 061 DI-LAB Design-Impact Laboratory 3 cr.
DI-LAB course is designed to engage a group of young architects and engineers in designing and implementing community-based projects in Lebanon. It is a one of a kind platform that provides design and engineering services intended to improve the living conditions of marginalized and neglected communities. It aims for a participatory process that engages the beneficiaries and users in order to incubate sustainable development. DI-LAB is organized by the American University of Beirut, Department of Architecture and Design and the Center of Civic Engagement and Community Services (CCECS).

ARCH 062/URPL 665 Development and Planning Policies 3 cr.
The course examines development and spatial planning projects and policies. It investigates policy governance and institutional setup, the role of professional expertise, and the spatial impacts, as well as the social and environmental impacts, on the built and un-built environments. Using case-study analysis of selected cities and towns, the course investigates how policies are elaborated through the use of chosen models, approaches, strategies and tools, privileging certain sectors and for specific ends.

ARCH 063 Do It, Then Fix It As You Go 3 cr.
The course introduces students to alternative ways in starting a design project, whether an object, an installation or a building. It is mainly a hands-on set of small exercises, through modeling, observing and description in a lab-like manner. Through these exercises, students will slowly discover how a ready-made can influence, guide and affect the course of evolution of a project and help in generating new ideas. The ready- made is a mindset preparation that will allow students to deconstruct preconceived ideas about design putting aside all a priori. The aim of such a methodology, that seems unrelated to the subject, will unknowingly allow them to lose their familiarity with the “project-to-be” and see it under a new light. This confrontational process has proven to be a dialectical tool that can be applied to any scale from a small object to an urban scale project. It is a method of work, a line of thought, a new line of investigation.

ARCH 064 Inclusive Design 3 cr.
The material in this course is designed to provide a detailed introduction to the Inclusive/ Universal Design philosophy and a theoretical understanding of design tools and techniques.

ARCH 065 Architecture and Culture: Geometry and Design 3 cr.
The course will analyze cultural disciplines, meaning and practice in Islamic architecture from classic to contemporary works. Recognizing the paradigms of Islamic architecture, the course will concentrate on the essential role of geometry in design and urban planning. There will be an in-depth review and discussion of the direction and influence in design, with attention drawn towards a better understanding and discussion of the creative processes relevant to

Islamic architecture and the crafts. Living and historic examples will be drawn from Andalusia, North Africa, the Middle East, Turkey, Iran, Arabia and the Indian subcontinent. A workshop will be conducted in Tunis, Fes or Cairo at the beginning of the term.

ARCH 066/URPL 669 Building and Planning Codes 3 cr.
The class focuses on the spatial and design aspects of property development codes, offering both normative outlook and practical application. The course covers such topics as controls and regulations on development intensity, bulk, accessibility, egress, and health and safety. In a comparative approach, a theoretical overview of planning and building codes from the American context (with reference to best practice planning zoning acts and the International Building Code) will be used to study the Lebanese code.

ARCH 068 Design Innovation and Entrepreneurship 3 cr.
This course introduces the relationship between architecture & design, entrepreneurship and business innovation, where students are invited to engage their skills beyond the architecture & design fields. The course underlines the role of design thinking as a core trigger to recognizing opportunities and processing them into innovative and successful ventures. With a focus on case studies of start-up companies, the course includes subjects such as establishing a clear project vision, assessing its business prospects, designing a solid business model, and developing a creative implementation strategy.

ARCH 069 New Territories 3 cr.
The course introduces students to digital design and fabrication through lectures and an applied project in which they will test and experiment with new digital and fabrication techniques. Digital fabrication, between advancements in software, simulation and machinery, is pushing practice today towards more complexity. These techniques have set forth a revolution in the way we make buildings, where the process of making has radically changed from the traditional sequence of design-analyze-build to a more interactive and integrative process that intercrosses analytical tools with design, simulation and fabrication.

CIVE 601/URPL 641 Introduction to GIS and Spatial Analysis 3 cr.
This course offers an introduction to geographic information systems (GIS) as applied to urban and regional planning, community development and local government. Emphasis is placed on learning GIS technology and spatial analysis techniques through extensive hands-on exercises using real-world data sets such as the census of population and housing. The course includes a small project on an urban planning problem involving the selection of appropriate methods, the use of primary and secondary data, computer- based modeling and spatial analysis.

URPL 664 Urban Land Use Planning 3 cr.
This course examines the theory and practice of land use planning as it has developed within the wider practice and theorization of planning. The course explores the ways in which land use controls have been developed and managed in different institutional and regional contexts, unraveling the different conceptualizations of planning that support each of them. Special emphasis is placed on the case of Lebanon where the practice of land use planning is explored through a detailed introduction to planning institutions, agencies and regulations.

CIVE 661/URPL 666 Urban Transportation Planning 3 cr.
An introductory course on methods and models used in transportation planning with emphasis on the urban context. Topics include travel patterns in urban areas, data requirements for planning and data collection techniques, transportation/land- use interaction, travel demand and network models, transport supply options and evaluation techniques.

ARCH 070 Parametric Mapping and Analysis Algorithms 3 cr.
Students learn to extract geometric, climatic and topographic data from local climatic statistical and satellite info using parametric tools such as Grasshopper and building physics platforms such as Energy Plus and Open Studio. The charted data is applied through digital simulations to test the environmental and topological performance of massing and the built environment in a specific context. Students will also use optimization algorithms to test the best-fit iterations to the required parameters. The course outcome will help generate possible topological solutions and environmental strategies to adopt in a specific climate and context. Prerequisite: Period ARCH 060.

ARCH 071 Research and Practices of Public Interest Design 3 cr.
The course explores Public Interest Design (PID), an approach where architectural projects result from a participatory approach involving the community in the design process. After mapping the different stakeholders involved in PID, students have the opportunity to survey needs of targeted communities and research methodologies and case studies that helped achieve humanitarian designs. Based on partnerships and a collaborative approach, students develop conceptual project proposals which contribute to solving issues affecting our society today.

ARCH 072 Earth: Design and Building 3 cr.
The course will investigate the developed techniques and creative design in Earth architecture, from brick to city making. We will examine natural materials: stone, mud brick (baked and sundried), pisé or rammed earth, salt, coral rock and shale. This architecture was integral to the environment and settlement patterns (urban and rural) of different cities, towns and villages, hence its considerable ecological and sustainable impact. The course is based on first-hand materials, projects and living examples from contemporary sites across the region (Spain, Morocco to the Indian subcontinent) and modern earth projects globally. (previously ARCH039)

ARCH 073 Sustainable Built Environments 3 cr.
A course that enhances knowledge pertaining to design aspects and application possibilities of climate responsive and environmentally friendly buildings. The impact of using construction building materials throughout the lifecycle of projects will also be discussed. At the end of the course, students will be equipped with the necessary knowledge that will enable them to make informed decisions regarding green projects in their careers.

Digital Media

GRDS 040 3D Animation 3 cr.
3D animation is an advanced course designed for students who are well versed in both concepts and technical research. The course builds the fundamental understanding of 3D computer modeling, texture mapping, lighting and camera rendering in order to develop 3D animated sequences. The course then introduces students to advanced 3D character modeling, rigging and animation. Student projects combine 3D animation and different output formats, like interactive techniques and motion design. Prerequisite: GRDS 343 or consent of instructor.

GRDS 043 Advanced Digital Animation 3 cr.
Building upon the foundations of the Motion Graphics course, this elective will explore the impact of time-based media on visual communication by focusing on three areas commonly dealt with in the field: translation of information datasets into time-based media, and how the mapping of this visual information can be augmented through time and motion sequences. Creating “hero characters” within a sequential narrative, identifying characteristics of the

lead elements (humanoid or design-based) and rendering these “personalities” in the way they move.

GRDS 046 Arabic Type in Motion 3 cr.
This course focuses on the integration of Arabic typography into motion design, recognizing its increasing importance in the graphic design field. While kinetic type is prevalent in digital media and branding, Arabic script often lags behind Roman type in this context. The course aims to bridge this gap by exploring the unique features of Arabic script, such as its anatomy, right-to-left direction, and connectedness (cursivity) to create innovative, kinetic Arabic typography. Students will engage in practical projects, discussions, and research to bring static Arabic text to life, addressing technical challenges along the way. Additionally, the course will cover the history of Arabic typography in screen-based media, offering insights from industry professionals.

Typography

GRDS 053 Advanced Arabic Typography 3 cr.
In addition to a new and summarized historical overview, the study of Arabic calligraphy involves dealing with the problems facing this traditional art in its efforts at modernization, innovation and adaptation to new technologies. This consists of two approaches to the subject, one that looks at the Arabic script, calligraphy, as an art by itself and the other that ponders its reformist and media function or its applications in modern life. Prerequisite: GRDS 252.

Graphic Design Professional Practice

GRDS 060 Critical Mapping 3 cr.
The course aims to introduce students to the possibilities of mapping as a research method and tool of visual representation. A critical understanding of the history of cartography and mapping practices combined with a theoretical positioning of the map as a socio-political product supports and informs the practical dimensions of the course. Prerequisite: GRDS 203 or ARCH 203.

GRDS 061 GraFix in the Environment 3 cr.
We are bombarded daily with visual clutter, noise, buildings, people, beggars, cigars, clothes, shops, garbage, cars, horns, broken sidewalks—you name it! Then there are signage, posters and billboards. All are components of our GraFix in the environment. This course is based on research, presentations and a series of small projects illustrating the various aspects of ‘GraFix.’ Prerequisite: GRDS 203 or consent of instructor. For Architecture students only.

GRDS 062 Brand Inc. 3 cr.
This course offers in-depth examination of branding – an increasingly common and central specialization in the contemporary graphic design profession. While looking at the history of the practice and the ways it has been (and is being) critically theorized, students will engage in a series of practical assignments, investigating and addressing existing local cases. In addition to the brand design component and its visual and verbal manifestations, the assignments will cover more fundamental operations of the brand, including brand research and assessment, brand positioning and strategy, brand architecture, brand planning and management, among other less obvious but equally crucial components of the brand development lifecycle.

GRDS 063 If Walls Could Talk/ Talking Walls: Urban Graffiti Animations 3 cr.
A course offered to Architecture and Graphic Design students covering the techniques, principles and processes of stop motion animation, particularly focusing on painting on walls and urban surfaces. Students are encouraged to explore the relationship of the method

of expression and techniques employed with the concepts, themes and issues, using alternate interpretations beyond the literal and classical narrative constraints. Students will be examining motion, tempo, rhythm, depth, color, texture, form, matter and spatial representation and relation. By the end of the course, students will produce a complete edited stop motion animation short film that will be publicly screened in the original setting. Prerequisite: GRDS 305 or consent of instructor. For Architecture students only.

GRDS 066 Alternative Comics: The Study and Making of Graphic Narratives 3 cr.
Through this course students will explore the language of comic art: building a textual and visual narrative, developing the word-image relationship, investigating temporal translations and expanding the concept of time. They will explore comics as a storytelling art form where emphasis is placed on narrative concepts as well as advanced technical and media skills. Students will explore ways in which images can tell a full story independent of the written word through tone, pace, time and implied dialogue, thereby expanding the storytelling range.

GRDS 064 Storytelling in Comics 3 cr.
This class focuses on crafting engaging stories through comics, emphasizing scriptwriting for a visual medium, page layout construction, and character development. Students are encouraged to tackle a variety of subjects, ranging from the fantastical to the intimate, always aiming to make contemporary concerns relatable, and taking full advantage of the narrative tools provided by the medium.

GRDS 050 Arabic Type Design 3 cr.
This course is an introduction to Arabic type design. It focuses on the skills and critical thinking required to design and produce digital typefaces. Lectures will take the student through the history, technology and contemporary practices of the industry that has started to take shape during the past 20 years. Basic lettering skills will be explored to aid in the primary focus of creating a functional, flexible and useful Arabic typeface. This course will enhance an understanding of the link between writing by hand, lettering and type design; that is, the transition from script to digital.

GRDS 067 Fanzine 3 cr.
Printed matter has provided a way for artists and individuals to express themselves to just a few, or to many. This class will explore the use of alternative media and will build upon the lessons learned in the publication design class. Projects will apply a variety of specialized publications—some traditional and some completely free-form— allowing students to focus more specifically on the content of their printed pieces, while expanding on the techniques available to them when developing the form thereof. Using printing methods both high- and low-end as well as high- and low-tech, students will explore the ways in which serial media and other types of publications provide an outlet for personal expression. Students will be expected to view this class not as a ‘how-to’ but as a ‘have to’, and they should be prepared to engage politically, socially, culturally, poetically, narratively, but most of all personally.

GRDS 068 Contemporary Jewelry Design 3 cr.
This course is an introduction to contemporary jewelry design spanning from the conceptual to the technical. It will cover a brief contemporary history, concept creation, technical drawing, prototyping and fabrication, as well as documentation and art-direction. The course proposes an experimental approach to sketching, making, and material exploration while maintaining a critical awareness of the social, political, cultural and aesthetical issues in contemporary jewelry design.

Landscape Architecture

Mission Statement

The mission of the program is to graduate lifelong learners and critical thinkers who adopt a holistic view of the landscape, and who are equipped with interdisciplinary, scientific, and creative skills to start as entry-level landscape architects and to become, with experience, successful professionals serving their communities.

Program Description

This is a four-year professional program which leads to a Bachelor of Landscape Architecture (BLA) and a Diploma of Ingénieur Agricole. The program integrates sciences and the arts as a foundation to design, plan and manage landscapes in natural and urban settings.

The BLA program received accreditation from the Landscape Architectural Accreditation Board (LAAB) in September 2021 for a period of six years, making it the first BLA program worldwide to be accredited by LAAB outside the USA. LAAB is the academic arm of the American Society of Landscape Architects (ASLA).

The degree requirements in Landscape Architecture (BLA) consist of the following:

- complete a minimum of 144 term credit hours (out of which 108 credit hours of mandatory core courses),
- 27 credits hours of General Education courses (Total GE requirement of 36 credit hours includes 9 credits satisfied within the Landscape Architecture core program)
- 9 credit hours of elective courses in FAFS,
- 3 credit hours of a core course in Community Engaged Learning (LDEM 263)
- achieve an overall minimum grade average of C+ GPA 2.3, and
- be approved for graduation by the faculty.

To meet the General Education requirements of AUB, BLA students must complete 27 credits of elective courses as following:

- 6 credit hours in Understanding Communication (English), including ENGL 203 and ENGL 204
- 3 credit hours in Understanding Communication (Arabic)
- 3 credit hours of an approved elective in Cultures and Histories
- 3 credit hours of an approved elective in Human Values
- 6 credit hours of approved electives in Societies and Individuals, including LDEM 262
- 3 credit hours of an approved elective in Quantitative Reasoning
- 3 credit hours of an approved elective in Understanding the World.

- Additional Thematic requirements:

One of the GE courses above has to cover the theme of History of Ideas (CHLA designation), and one course has to cover the theme of Social Inequalities.

Curriculum for the Degree of Bachelor of Landscape Architecture (BLA) and Diploma of Ingénieur Agricole

First Year

Fall term		**Credits**
LDEM 202	Studio I: Landscape Design Fundamentals	4
LDEM 200	Landscape Technical Drawing	4
LDEM 214	Landscape and Geomorphology	3
LDEM 207	Landscape Architecture History I (Cultures and Histories)	3
ENGL 203	Understanding Communication - English	3
		Total 17
Spring term		**Credits**
LDEM 216	Studio II: Landscape Garden Design	4
LDEM 201	Landscape Descriptive Drawing	4
LDEM 217	Soils in the Landscape (Understanding the World)	3
LDEM 291	Surveying and Base Plan Development	3
LDEM 211	Landscape Horticulture	3
		Total 17
Summer term		**Credits**
LDEM 252	Computer Aided Design	3
1 General Education Requirement - Cultures and Histories Elective		3
		Total 6

Second Year

Fall term		**Credits**
LDEM 222	Studio III: Landscape Planting Design	4
LDEM 210	Botany and Plant Ecology for Landscape Architects	3
LDEM 248	Site Engineering: Construction Material	3
LDEM 219	Plant Material I	2

1 General Education Requirement - Understanding the World Elective		3
		Total 15
Spring term		**Credits**
LDEM 204	Studio IV: Cultural Landscape Design	6
LDEM 208	Landscape Architecture History II (Cultures and Histories)	3
LDEM 247	Site Engineering: Earthworks, Roads and Drainage	4
LDEM 263	Landscape Appreciation and Site Analysis (Community-Engaged Learning course)	3
LDEM 221	Plant Material II	1
		Total 17
Summer term		**Credits**
LDEM 249	Site Engineering: Design Implementation	3
LDEM 231	Sustainable Water Management Techniques	3
FAFS Elective		3
		Total 9

Third Year

Fall term		**Credits**
LDEM 246	Studio V: Natural Landscape Design	6
LDEM 251	Geographic Information System (GIS)	3
LDEM 218	Landscape Ecology	3
1 General Education Requirement - Societies and Individuals Elective		3
		Total 15
Spring term		**Credits**
LDEM 228	Studio VI: Urban Landscape Design	6
LDEM 265	Landscape Management	3
1 General Education Requirement - Quantitative Reasoning Elective	Any course from the GE list, except; MATH 203 (only students coming from Humanities school background can take it); EDUC 271, EPHD 203 and NURS 203	3
LDEM 290	Professional Practice	3
		Total 15

Summer term		**Credits**
LDEM 292	Internship (Practicum)	2
		Total 2

Fourth Year

Fall term		**Credits**
LDEM 241	Studio VII: Landscape Capstone Project I	4
LDEM 260	Contemporary Issues in Landscape Architecture	3
ENGL 204	Understanding Communication - English	3
FAFS Elective		3
1 General Education Requirement - Societies and Individuals Elective		3
		Total 16
Spring term		**Credits**
LDEM 242	Studio VIII: Landscape Capstone Project II	6
ARAB	Understanding Communication - Arabic	3
FAFS Elective		3
1 General Education Requirement - Human Values Elective (Ethics course)		3
		Total 15

Course Descriptions

Mandatory Core Courses

The following design courses are part of the program requirements. There is a grade average requirement for LDEM 202, LDEM 216, LDEM 222, LDEM 204, LDEM 246, LDEM 228, LDEM 241 and LDEM 242. A student should maintain a combined average GPA of 2.3 in any two consecutive design studios within any given year during their BLA course of study. Failure to achieve this will result in the student having to repeat the design studio in which s/he received the lowest grade.

In addition to the above GPA 2.3 rule, students will be allowed to register LDEM 241 and LDEM 242 (Final Year Capstone Project I and II) only if they have successfully met studio passing requirements and passed all core courses prior to the final year.

LDEM 200 Landscape Technical Drawing 4 cr.
This is a course in descriptive geometry and graphic communication in landscape architecture. Students learn to use drawing tools. They acquire techniques of representation of 3D and space on 2D surfaces, including orthogonal (plans, sections and elevations), paraline (axonometrics and isometrics) and perspective drawings that cover construction of shades and shadows, as well as representation of open space, trees, and elements of the natural and built landscapes. Students are introduced to the basics of manual and

digital drawing techniques. The technical drawing techniques are regulated by a set of worldwide conventions used to clarify and visualize ideas and design process.

LDEM 201 Landscape Descriptive Drawing 4 cr.
The focus of the studio is to emphasize visual thinking techniques and graphical information representation. Through the use of multiple media to sketch and draw the landscape, students learn to understand their environment through developing skills in mapping information, understanding their relationships and graphically representing it.

LDEM 202 Studio I: Landscape Design Fundamentals 4 cr.
This course is the first of two fundamental design courses (the second is LDEM 216). It is a foundation for subsequent design courses. It introduces students to theories of design through readings, analysis and hands-on projects. The course is structured as a series of short exercises and is divided into two parts:

Part 1: Fundamental Elements of Landscape Design

This course is an exploration into the modes of space whish are two-dimensional surfaces, three-dimensional objects, spatial enclosure and the open continuous landscape. The emphasis is on the media of landform, water, plants and structures as defining agents of human space in the garden and the landscape at large. The form and character of the space is further determined by the context of the site and the nature of spatial geometry with studies of form, pattern, texture, tone and color.

Part 2: Basics of Design

This studio introduces students to reading and responding to the site. Goals include learning to experience and record the landscape, design in response to the site, think creatively, generate design ideas and understand design as a process, gain knowledge of design precedents and principles, and learn tools and techniques of visual expression. Students will learn through in-class exercises, reading assignments and design projects. Studio time is divided among lectures, field trips, studio design work, desk critiques, pin-ups and presentations.

LDEM 204 Studio IV: Cultural Landscape Design 6 cr.

Part 1: Cultural Landscapes

The cultural landscape studio introduces students to the process of research, planning, design, and management of historically and culturally significant landscapes through selected real-world site projects. Part one introduces methods of assessment, approaches and policies (local and international), case studies of similar projects as well as historical analysis of the study area.

Part 2: Historic Preservation and Design

The course explores landscape design proposals for sites within historically significant areas. Emphasis is on methods of analysis and design development. Graphic and photographic documentation of existing built forms serve as the basis for design proposals. Students engage in the following five steps in the process of their study: 1) Students investigate a landscape's site history using primary and secondary resources. 2) They analyze, document and evaluate existing conditions. 3) They interpret the significance of the natural, historic and cultural importance of the landscape site. 4) They recommend appropriate treatment strategies. 5) Finally, they present the findings of this research process. Prerequisite: LDEM 222.

LDEM 207 Landscape Architecture History I 3 cr.
This course aims to explore significant transformation in landscape architecture history and present a range of information to enable the development of alternative, diverse and nuanced communication tools for issues of the landscape. A series of lectures combined with literature study and a visual and textual project analysis aims to guide students to be able to analyze, evaluate and understand historic landscapes in contemporary society. (Students who receive credits for LDEM 207 cannot receive credits for LDEM 107. Fall only)

LDEM 208 Landscape Architecture History II 3 cr.
The course aims to explore the development of designed landscapes and manifestations of landscape architecture from the 18th century to the present. By investigating the complex relationships between people and their environments, it will shed light on the shaping of outdoor space and the evolution of human settlements within built and natural settings. The course will provide a critical and historical understanding of landscape architecture as ideology, experience, spatial form and profession. It will focus on pioneers within the field and on historical examples of gardens, parks, community spaces and environmental planning strategies, which explain landscape designs as products of cultural, political, social and environmental influences. Prerequisite for LDEM students only: LDEM 207. (Students who receive credits for LDEM 208 cannot receive credit for LDEM 108. Spring only).

LDEM 210 Botany and Plant Ecology for Landscape Architects 3 cr.
This course tackles key concepts, principles and current issues in botany, plant ecology and plant conservation and discusses their application to the Middle East region and to landscape architecture. The course is structured to include peer teaching, debates, and discussion of articles and case studies. Upon completion of the course, students will have solid knowledge and a reference base to readily integrate natural and human made vegetation into their designs.

LDEM 211 Landscape Horticulture 2.3; 3 cr.
This course covers basic principles of selection and management of landscape plants. Students will learn how to select plants appropriate to site and purpose, and will be introduced to concepts and applications of environmental horticulture and its contribution to the well-being of humans and nature. The course relies on hands-on field projects, site visits, essays and photo-documentation.

LDEM 214 Landscape and Geomorphology 3 cr.
This course provides crucial insights on how landforms and hence landscapes develop in space and time. It introduces students to the geomorphological underpinnings of landscape formation and trains them to read the natural and anthropogeomorphic aspects of landscapes.

LDEM 216 Studio II: Landscape Garden Design 4 cr.
This course is the second of two design introductory courses. It is a foundation for subsequent courses that explore project design in varied contexts and scales. It introduces students to theory and practice of landscape design and site planning by doing, observing, reading and reflecting. Students apply knowledge acquired from LDEM 202 on real site contexts with an emphasis on site design. Focus is on two dominant landscape design types: the park (public) and the garden (private). Students will analyze case studies and relevant readings pertaining to both landscape typologies. Prerequisite: LDEM 202.

Part 1: The Park

The focus is on the application of spatial theory and design process to a specific site

context. Work will develop map-reading skills at various scales and strengthen drawing, lettering and cross-section representation skills. The emphasis is on landform design in a public park setting (urban and non-urban).

Part 2: The Garden

The garden is a personal, direct and intimate expression of landscape architecture. It is explored here as a contemporary art primarily through the design of individual sites and, secondarily, through guided research and discussion sessions which explore important works and design theory in the genre. The emphasis is on developing an informed and creative personal approach that inspires while solving practical problems on real sites. The focus here is on residential gardens or gardens pertaining to institutions.

LDEM 217 Soils in the Landscape 2.3; 3 cr.
This course will examine soils as integral components of the landscape and as a medium for landscaping activities. It is designed to help students 1) acquire a good understanding of the relationship between geology, landform, soil, vegetation and landscape, and 2) implement management actions essential in landscaping, such as soil preparation, soil amendment and fertilization. Emphasis will be placed on soils as a component of Mediterranean ecosystems and land mosaics with special focus on soil resources in Lebanon. Labs and field trips will be organized in order to observe and analyze soils in the environment, and to manipulate soil substrates for optimizing plant growth. Prerequisite for LDEM students only: LDEM 214.

LDEM 218 Landscape Ecology 3 cr.
Students will be introduced to the discipline of landscape ecology. The course will focus on the interplay between landscape patterns and ecological processes at large (landscape scale). It also focuses on detecting and characterizing social and natural patterns of influence on landscapes and landscape dynamics. Implications of landscape pattern and landscape management will also be covered. Case studies will be selected from different Mediterranean environments where the co-evolution of human communities with the natural settings have permanently shaped and modified landscape structures and ecosystem functions. The course will also explore applications in relevance to landscape architecture and planning. Prerequisites: LDEM 210 and LDEM 217.

LDEM 219 Plant Material I 1.3; 2cr.
This course will introduce students to the botanical and horticultural dimension of designed landscapes by focusing on the species and cultivars that have a landscape interest. In the process of learning about landscape plants, students will be introduced to the taxonomic, horticultural, ornamental and landscape aspects of approximately 300 plants during the sessions. Emphasis is placed on major categories of herbaceous plants and woody plants used in landscape including trees, shrubs, vines, flowering plants, ornamentals and hedge plants commonly utilized in this region by a combination of experiential activities, discussions, online resources and homework assignments. Students will also learn the proper selection and usage of these plants in landscape situations, plant assets and liabilities, alternative plants for various situations and cultural aspects.

LDEM 221 Plant Material II 0.3; 1 cr.
This course will introduce students to the botanical and horticultural dimension of designed landscapes by focusing on the species and cultivars that are used in edible and medicinal native and urban gardens. In the process of learning about landscape plants, students will be introduced to the taxonomic, horticultural, ornamental and landscape aspects of approximately 150 plants during the sessions. Emphasis is placed on major categories of

herbaceous plants, as well as on woody ornamentals, fruit trees and native plants used in the landscape including trees, shrubs and vines. Students will also learn the proper selection and usage of these plants in landscape situations, plant assets and liabilities, alternative plants for various situations and cultural aspects.

LDEM 222 Studio III: Landscape Planting Design 4 cr.
The course introduces students to the basic principles of designing with plants. Landscape Architecture combines elements of art and science to create a functional, aesthetic and spatial experience of the outdoor space. One initial purpose of designing with plants is to understand how to blend technology (the built environment) into the natural surroundings and to bring natural elements into the built environment. In order to work toward a desirable landscape design and hence successful planting plan, students will develop working knowledge of artistic elements, design principles and basic horticultural knowledge of plants. Successful plant composition and layout is obtained with acknowledgement of the importance of plants as a design material that enhances the definition and spatial experience of outdoor spaces. Prerequisites: LDEM 216, LDEM 211 and LDEM 219.

LDEM 228 Studio VI: Urban Landscape Design 6 cr.
The focus of this studio is site design in the urban context. As such, it will enable students to explore the particular challenges of designing in complex urban environments. By their nature, urban environments have multiple layers and meanings and are influenced by an array of forces. Urban landscapes are an amalgam of myriad social, cultural, political, economic and ecological processes on physical space. Designing in the urban context therefore requires sensitivity to these many layers and influences. Creative response to the challenges of urban environments requires careful attention to the landscape narratives students choose to tell, and how users of a space learn and discover new things from a site. Prerequisites: LDEM 246.

Part 1: Understanding and Analyzing Urban Landscape Systems

The purpose here is to briefly overview basic concepts of urbanism (transportation, infrastructure, zoning laws, real estate markets, economic development, social issues and so on) with strong emphasis on understanding urban open spaces and networks through readings. Students will analyze case studies of similar contexts and analyze urban landscape systems pertaining to the study area.

Part 2: Study Area

An application of urban design theories to various scales of urban design, with special focus on civic scale design elements and spatial and functional requirements. The end goal is to design a landscape system or site with an urban context.

LDEM 231 Sustainable Water Management Techniques 3 cr.
The course will focus on water as a scarce resource in Lebanon and the region. Students will be exposed to theoretical and practical aspects of sustainable water resources management as related to landscape design, namely in the areas of demand efficient water use and management. Students will learn about efficient indigenous and exotic landscape irrigation, surface and subsurface drainage design, rainwater harvesting and water conservation. Offered in the summer term only.

LDEM 241 Studio VII: Landscape Capstone Project I 4 cr.
This course is intended to assist students in selecting an individual capstone project, finding and organizing appropriate information needed for the project, and establishing

parameters and questions for the design and development of the project. The studio focuses on an approved design problem requiring individual work, which will serve as a comprehensive examination. Preparation and presentation include a written and graphic problem statement, analysis and detailed plans or other approaches approved by the instructor. Prerequisites: LDEM 228 and LDEM 246.

LDEM 242 Studio VIII: Landscape Capstone Project II 6 cr.
This course includes the Final Year Project (FYP), conducted with a faculty advisor, and includes collection, analysis and interpretation of project information. The final studio covers a variety of projects that may include landscape design projects involving fine arts, urban design and town planning. Students are expected to achieve a comprehensive understanding of ideas, processes and concepts. This is the capstone project where students demonstrate their acquired design skills and knowledge. They are expected to develop their design, produce presentation drawings and defend their ideas orally at a professional level. Students are assessed by department faculty. Note: This course fulfills the capstone writing intensive requirement for the Landscape Architecture major. Prerequisite: LDEM 241.

LDEM 246 Studio V: Natural Landscape Design 6 cr.
This course examines the relationship between ecological landscape design and natural elements/resources. The emphasis is on understanding natural and human/cultural systems and the interactions across. Of primary importance is understanding of ecological processes that occur within. Students will learn the significance of these systems and their potential contribution to sustainable environments while highlighting the threats and opportunities from anthropogenic impacts. As a design studio, students will explore landscape planning and design from the regional to the site-development scale and they will learn how to integrate ecological design and planning frameworks within their design proposals to balance human use and ecological integrity. This will require the ability to synthesize information about natural features, cultural resources, and development patterns to create spatial landscape strategies that address the unique problems and opportunities of a chosen study area. Prerequisites: LDEM 204.

LDEM 247 Site Engineering: Earthworks, Roads and Drainage 4 cr.
This is the second of the three courses in the LDEM Site Engineering sequence. This course focuses on the study of techniques essential to the horizontal and vertical development of site designs; emphasis on grading, cut and fill calculation, storm-water drainage and management, erosion control, road alignments and earthwork. This is a lecture course with intensive exercises for engineering calculation and drawing techniques. Prerequisite: LDEM 248.

LDEM 248 Site Engineering - Construction Material 3cr.
This is the first of the three courses in the LDEM Site Engineering sequence. This course will serve as a capstone to landscape architectural construction with emphasis on understanding and preparing complete sets of construction documents for landscape architecture projects. It includes methods and procedures necessary for transforming a design idea into a set of construction drawings that is accurate, precise and clearly understood; and the principles, processes and techniques of site engineering for the “hard” and “soft” elements of landscape architecture and surfaces, including wood construction, free-standing and retaining walls, pavement, steps, decks, lighting and planting irrigation. Students will also implement their designs through hands-on experience.

LDEM 249 Site Engineering - Design Implementation 2.5; 3cr.
This is the third and last of the three courses in the LDEM Site Engineering sequence. This course includes presentation and classification of landscape construction and materials: in particular, material types and measurement standards of construction elements. Floor elements, such as paving materials, pedestrian ways, stairs and ramps, are emphasized. Border and enclosure elements, such as walls and fences, are studied. Shelter elements, such as pergolas and gazebos, are explored. Water elements, such as ponds, waterfalls, pools and fountains, are studied. Outdoor space, furniture and ornaments, such as benches, litterbins, lighting elements, pedestrian bridges and decks, are focused upon. Interactions between materials, buildings, spaces and humans will be explored. Research studies and case studies will be conducted for designing original landscape construction and material. This studio course will focus on lectures, exercises and projects dealing with landscape equipment, and design methods. In addition, students have exposure to measuring quantities and defining specifications. Prerequisites: LDEM 247 and LDEM 248. Offered in the Summer term only.

LDEM 251 Geographic Information System (GIS) 2.3; 3 cr.
This course acquaints students with classical and modern methods of landscape analyses as well as assessment and changes in landscape structure using ArcGIS and its extensions. Students will be gradually introduced to the subject both to acquire and integrate geographic data, and to learn how to analyze and interpret the results. All topics are demonstrated on selected tasks. The goal of this course is to explore various approaches to modeling landscape pattern and change. The focus is on the design and use of computerized geographic information systems for land planning and design decisions and on understanding, describing and predicting land-use and land-cover. The course will move between social and ecological processes and applications of the models. Students will learn to evaluate the trade-offs associated with use of a particular modeling approach within a given situation, and to implement (at least minimally) several of the approaches discussed.

LDEM 252 Computer Aided Design 4.5; 3cr.
This is an introductory course that covers Computer Aided Design digital drawings to develop skills for landscape architects to communicate, create and implement. The course includes lectures and computer labs focused on learning the basic commands for drawing in two dimensions including: absolute and relative coordinates; working in layers, paper and model space; manipulation of text and plotting. The focus is on understanding the software environment and basic applications of AutoCAD and on using relevant tools of this graphic design software to develop high quality landscape design graphic outputs, such as diagrams, perspectives, sections, plans and 3D models. These skills will enable students to employ computer graphic design tools in landscape architecture studios throughout the rest of their degree courses. Offered in the Summer term only.

LDEM 260 Contemporary Issues in Landscape Architecture 3 cr.
This course addresses recent trends in landscape architecture that cover the multitude of approaches, in order to broaden the students' theoretical knowledge, encourage their critical and analytical abilities, and sharpen their understanding of systems and the landscape as a cultural expression. The course discusses recent interventions by landscape architects in different parts of the world and assesses them in relation to their natural, cultural and socioeconomic contexts. At the same time, students are asked to critically evaluate the current open space situation in Beirut and discuss ideas and approaches related to it. Prerequisites (for LDEM students only): LDEM 207 and LDEM 208.

LDEM 263 Landscape Appreciation and Site Analysis 3 cr.
This course introduces students to specific landscapes of Lebanon and teaches them how to read spaces by analyzing the interrelationship between natural conditions, human settlement and land use over time. The course is based on an integrated view of the landscape, taking into consideration both natural and cultural components. Students will be exposed to different approaches to perceiving, reading and interpreting the landscape. Prerequisite: LDEM 291.

LDEM 265 Landscape Management 3 cr.
This course is designed to help students acquire the necessary knowledge to produce landscape management manuals. Students will also have the opportunity to learn about the various aspects and issues related to landscape management by reading and discussing peer-reviewed articles related to the field or observing the management of actual projects. Prerequisites: LDEM 211, LDEM 217 and LDEM 231.

LDEM 290 Professional Practice 3 cr.
The course discusses the professional practice of landscape architecture. It is structured to give students an overview of the professional opportunities, roles and responsibilities within which graduates of the program will most likely practice their trade. The course will be structured as a series of lectures, workshops, discussions and presentations from practicing landscape architects, engineers and other professionals who will expose students to different aspects of the trade. It introduces basic issues in the practice and profession of landscape architecture, challenging the student to critically examine professional, ethical, economic, political, social and other issues in the current practice. It covers the different typologies of landscape projects, firms and clients, and introduces the full cycle of a landscape project from award and conception to construction and site supervision.

LDEM 291 Surveying and Base Plan Development 2.3; 3 cr.
The course focuses on the fundamentals of plane surveying: basic measurement of distance, angles and elevations. It also focuses on the use of basic surveying equipment, such as total stations, levels and tapes, theodolites field notes; and basic computations, such as traverse closure and determination of areas. It is comprised of lectures and studio projects dealing with earthwork estimating, storm water management, site surveys, site layout, and horizontal and vertical road alignment. Students will survey a site, collect and analyze data and transform measurements into a base plan essential for any design process. This will include features such as topographic contours, spot levels, structures, vegetation, water ways and utilities.

LDEM 292 Internship (Practicum) 2 cr.
The objective of the landscape architecture internship is to offer students the opportunity to broaden their educational experiences by actively participating in a professional landscape architecture, planning and/or engineering office environment. The intention is to provide an opportunity for exploring the world of landscape architectural practice through professional and reflective activities that address educational goals and objectives. Prerequisites: LDEM III standing and LDEM 290. Offered in the summer term only.

Elective Courses

LDEM 107 Landscape Architecture History I 3 cr.
The purpose of this course is to investigate the history of landscape architecture and understand the process of creating it. The course outlines the principles of landscape history in relation to the history of art, nature, technology and culture in general and tries to interpret

their scientific and artistic meaning within the current debate on the goals of landscape architecture among the other design disciplines. (Students who receive credits for LDEM 107 cannot receive credits for LDEM 207. Freshman-level. Fall only).

LDEM 108 Landscape Architecture History II 3 cr.
The course explores the development of designed landscapes and manifestations of landscape architecture from the 18th century to the present. It will focus on pioneers within the field and on historical examples of gardens, parks, community spaces and environmental planning strategies, which explain landscape designs as products of cultural, political, social and environmental influences. (Students who receive credits for LDEM 108 cannot receive credits for LDEM 208. Freshman-level. Spring only).

LDEM 203/ENSC 202/ARCH 060L The Environment and Sustainable Development 3 cr.
This course is an introduction to sustainable development which include concepts, goals, and economic and social aspects. Also, environmental issues associated with development that involve natural resource management, population, food production and energy, are emphasized. The institutional framework, standards and policies, emerging technological applications and their impacts, resolution of environmental conflicts, and future trends will be explored.

LDEM 230 Water and the Environment 3 cr.
This is an introductory course addressing the interactions between water and the natural environment, and the role of human activities in these interactions. This course covers a broad range of topics, including climate change, the hydrologic cycle, watershed hydrology, runoff generation, groundwater, point and nonpoint sources of pollution, best management practices and a multitude of water quality issues. Local, regional and international case studies will be covered to foster a better understanding of water quality and quantity concepts, applications and principles. (Open to all students except LDEM students).

LDEM 254/ARCH 061L Regional and Community Studies 1.3; 3 cr.
The department will identify a community-driven project in which local and possible international students will participate. The target community will be selected at least 6 months prior to the start of the summer term. The selection process will depend on input from outreach activities performed by the department and by other academic units with which the department coordinates closely, such as NCC and CCECS. This course focuses on applied knowledge and is thus taught by doing, as in by creating a design that is ready to be applied as well as a full proposal. Landscape designed elements are thus site/context dependent; therefore, applied ecology and cultural landscape history are important to concept development. Students enrolled in the course will work fourteen days on site with community partners and stay with local families during that period, and spend 1 week on campus working on the design and proposal. Working together in groups, students will create a practical design. Using a combination of lectures, discussions, interactions with nature, hands-on projects and community immersion, students will analyze the local environment and design holistic systems that meet the needs of people while respecting the needs of nature.

LDEM 261 Spatial Structure and Movement 3 cr.
The course is concerned with the experience of outdoor and indoor spaces, and the direct influence the placement of any object has on the perception of the latter and on the movement within. The course is based on the assumption that the notion of movement and body proportion for mankind has been a primary design tool throughout history and will try to reevaluate this tool for contemporary design.

LDEM 262 Healing Nature: Theoretical Perspectives and Applications 3 cr.
This course investigates the relationship between people and nature and seeks to deepen students' sense of connection with the natural world. There is a large body of literature that sheds light on the beneficial effects of nature. Students will learn about theories that explain how nature, outdoor green spaces and gardening have a positive impact on our lives and well-being. They will be introduced to current research findings and be trained in reading and comprehending peer reviewed articles related to this field. Students will learn basic research methods and use these to implement class projects to gain first-hand experience of people's response to nature.

LDEM 264 Interior Landscaping 2.3; 3 cr.
This course is an introduction to the principles and practices of interior landscaping with an emphasis on plant selection and handling, environmental conditions, specifying and maintaining healthy plant materials, developing portfolios of interior planting designs and details for proper installation of drainage and irrigation, and fixed or movable containers. The course also includes design compositions of planned interior landscapes in a creative and aesthetic environment and the availability of plant material on the market. Prerequisite for LDEM students only: LDEM 211 or equivalent.

LDEM 266 Introduction to Edible Landscapes 3 cr.
This course introduces students to the principles of edible landscaping and offers an overview of the history and significance of the topic in our region. Edible landscapes incorporate fruit trees, vegetable plants, as well as wild edible plants in a way that is both productive and aesthetically interesting. The course will shed light on the history and the evolution of human settlements in relation to edible and food growing landscapes within built and natural settings.

LDEM 267 Introduction to Restoration Ecology 3 cr.
This course introduces various practical tools required for the recovery of various degraded, damaged, or destroyed ecosystems with an emphasis on urban ecosystems.

LDEM 268 Introduction to Permaculture Design 3 cr.
Permaculture is an ethically-based design approach which aims to create sustainable human communities through ecological and regenerative design. This course covers the theory and basic principles of permaculture. Students will develop a good knowledge about the permaculture ethics and principles, their applications and how these can be integrated both at urban and at rural surroundings.

LDEM 270 Ornamental Plants for Dry Landscapes 3 cr.
This course is a survey of native, wild and domesticated plants adapted to dry areas with potential use in dry landscapes, with an overview of the different environmental and physiological factors that determine plant growth and development under such dry conditions. Prerequisite for LDEM students only: LDEM 210 and LDEM 211 or equivalent.

LDEM 271/ARCH 073/CIVE 686/ MECH 681 Environmentally responsive buildings 3 cr.
This course enhances knowledge pertaining to design aspects and application possibilities of climate responsive and environmentally friendly buildings. The impact of using construction building materials throughout the lifecycle of projects will also be discussed. At the end of the course, students will be equipped with the necessary knowledge that will enable them to make informed decisions regarding green projects in their careers. Prerequisite for LDEM students: LDEM III or LDEM IV or graduate standing and consent of instructor.

LDEM 272 Landscape Architecture: Gender, Women and Inclusion 3 cr.
The course places the concept of inclusion and gender at the center of explorations of landscape architecture. It investigates the complex relationships between people and their environments, and the ways in which people read, experience, define and create landscapes. It places an emphasis on the role of women in particular, and the way in which women have shaped, and have been shaped by, their physical environments. It looks at women as users, as thinkers and community leaders, as well as designers, and highlights their overall influence on landscape theory and practice from these different perspectives.

LDEM 298 Special Topics in Landscape Architecture: Project/Workshop 1; 2 or 3 cr.
The project/workshop course provides opportunities for students to participate in hands-on experiences, gain new skills and be exposed to real projects. Students will work on issues and applications that are not included in regular courses. General prerequisites will be identified whenever the project/workshop course is offered. The topic, format, and prerequisites will vary; therefore, it might be repeated for credits.

LDEM 299 Special Topics in Landscape Architecture: Tutorial 1; 2 or 3 cr.
The tutorial provides opportunities for students to pursue directed study readings and preliminary research relevant to their concentration when existing courses do not offer the required subject matter. It covers special topics developed under the direction of a faculty member on a tutorial basis. The topic, format, and prerequisites will vary; therefore, it might be repeated for credits.

Baha and Walid Bassatne Department of Chemical Engineering and Advanced Energy

Chairperson:	Ahmad, Mohammad
Professor:	Ahmad, Mohammad
Associate Professors:	Al-Hindi, Mahmoud; Azizi, Fouad; Saad, Walid; Zeaiter, Joseph
Assistant Professors:	Ghorayeb, Kassem; Maalouf, Elsa
Instructor:	Itani, Adnan
Assistant Instructor:	El Berjawi, Mohammad

The Baha and Walid Bassatne Department of Chemical Engineering and Advanced Energy offers two undergraduate degree programs, Bachelor of Engineering in Chemical Engineering (BE ChE) and Bachelor of Science in Chemical Engineering (BS ChE), a minor in Chemical Engineering and a minor in Petroleum Engineering.

Bachelor of Engineering (BE)

Major: Chemical Engineering

Mission

The mission of Chemical Engineering in MSFEA is to provide a stimulating and supportive environment for quality education to prepare graduates for career opportunities in a rapidly changing world by fostering the development of professionalism, leadership qualities and ethical behavior, and to contribute to expanding knowledge in chemical engineering and its related fields.

Program Educational Objectives

Our graduates will be able to:

- advance successfully in their careers as reflected in continued employment, job satisfaction, leadership responsibilities and professional recognition while always maintaining ties with the university;
- apply their scientific knowledge and engineering skills in graduate studies and/or industry; and
- be professionals who recognize the broader aspects of engineering practice including economic, environmental, social, political, safety and sustainability constraints.

Bachelor of Engineering Program Requirements

The undergraduate curriculum for the degree of Bachelor of Engineering (BE) in Chemical Engineering is a five-year program. It consists of 173 term credit hours of coursework, of which 30 credits are completed in the freshman year while the student is enrolled in the Faculty of Arts and Sciences, and of which 143 credits are completed in four years while the student is enrolled in the Maroun Semaan Faculty of Engineering and Architecture. Students who are admitted at the sophomore level will be required to complete 143 credits in four years to earn the degree as outlined here:

General Engineering Fundamentals (16 credits)		
FEAA 200	Introduction to Engineering and Architecture	3 cr.
CIVE 210	Statics	3 cr.
EECE 210	Electric Circuits	3 cr.
EECE 231	Introduction to Programming Using C++ and MATLAB	3 cr.
MECH 220	Engineering Graphics	1 cr.
INDE 302	Operations Research I	3 cr.
Mathematics (15 credits)		
MATH 201	Calculus and Analytic Geometry III	3 cr.
MATH 202	Differential Equations	3 cr.
STAT 230	Introduction to Probability and Random Variables	3 cr.
MATH 218	Elementary Linear Algebra with Applications	3 cr.
MATH 251	Numerical Computing	3 cr.
Sciences (15 credits)		
CHEM 204	Physical Chemistry for Chemical Engineers	2 cr.
CHEM 207	Survey of Organic Chemistry and Petrochemicals	4 cr.
CHEM 219	Analytical and Instrumental Chemistry for Chemical Engineers	3 cr.
Science Elective	(From approved list)	3 cr.
Science Elective	(From approved list)	3 cr.
General Education (27 credits) beyond Freshman at 200 Level		

Given the current AUB General Education requirements, as stipulated in the Undergraduate

Catalogue, students are required to complete 9 credits in Cultures and Histories (including one History of Ideas), 3 credits in Human Values, 6 credits in Societies and Individuals, one is ECON 212, and the second should reflect Social inequalities, 6 credits in Understanding Communication - English: ENGL 203 and ENGL 206, and 3 credits in Understanding Communication - Arabic. As for the community engaged learning requirement, student should register HEHI 201 “Foundations of Humanitarian Engineering and Public Health Innovations” which is also considered as a Technical elective from outside major.

Core Chemical Engineering Courses (58 credits)		
CHEN 201	Chemical Process Principles	3 cr.
CHEN 214	Thermodynamics I	3 cr.
CHEN 310	Transport Phenomena Lab	2 cr.
CHEN 311	Introduction to Fluids Engineering	3 cr.
CHEN 312	Separation Processes	3 cr.
CHEN 314	Chemical Engineering Thermodynamics	3 cr.
CHEN 351	Process Instrumentation and Measurements	3 cr.
CHEN 410	Unit Operations Lab	2 cr.
CHEN 411	Heat and Mass Transfer Operations	3 cr.
CHEN 417	Reaction Engineering and Reactor Design	3 cr.
CHEN 415	Mechanical Unit Operations	3 cr.
CHEN 431	Materials Engineering and Corrosion	3 cr.
CHEN 451	Process Control	3 cr.
CHEN 470	Chemical Process Design	3 cr.
CHEN 480	Safety and Loss Prevention	3 cr.
CHEN 500	Approved Experience	0 cr.
CHEN 501	Final Year Project I	3 cr.
CHEN 502	Final Year Project II	3 cr.
CHEN 541	Biochemical and Bioprocess Engineering	3 cr.
CHEN 570	Process Synthesis and Optimization	3 cr.
CHEN 571	Chemical Product Design	3 cr.
Chemical Engineering Electives (12 credits) Students can choose courses from the following list and any new (CHEN -600 level course or above)		
CHEN 413	Water and Wastewater Treatment	3 cr.
CHEN 490	Fundamentals of Petroleum Engineering	3 cr.
CHEN 499	Undergraduate Research	3 cr.
CHEN 590	Petroleum Refining	3 cr.
CHEN 591	Natural Gas	3 cr.
CHEN 593	Reservoir Petrophysics	3 cr.

CHEN 592	Production Engineering	3 cr.
CHEN 595	Drilling Engineering	3 cr.
CHEN 594	Reservoir Engineering	3 cr.
CHEN 6XX	(CHEN 600-Level and above)	3 cr.
CHEN 610	Materials Design and Characterization	3 cr.
CHEN 611	Transport Phenomena	3 cr.
CHEN 612	Desalination	3 cr.
CHEN 613	Membrane Separation Processes	3 cr.
CHEN 614	Environmental Engineering Separation Processes	3 cr.
CHEN 615	Advanced Mass Transfer	3 cr.
CHEN 617	Chemical Reactor Analysis and Design	3 cr.
CHEN 618	Colloid and Interface Science	3 cr.
CHEN 619	Sustainability Science: Human and Environment Interaction	3 cr.
CHEN 620	Reaction Engineering and Reactor Design II	3 cr.
CHEN 630	Sustainable Biorefinery Processes	3 cr.
CHEN 632	Carbon Capture, Usage and Storage	3 cr.
CHEN 651	Advanced Process Control	3 cr.
CHEN 670	Advanced Process Flow-Sheeting	3 cr.
CHEN 672	Polymer Science	3 cr.
CHEN 673	Engineering of Drug Delivery Systems	3 cr.
CHEN 674	Process Operations and Diagnosis	3 cr.
CHEN 675	Tissue Engineering	3 cr.
CHEN 690	Reservoir Engineering	3 cr.
CHEN 691	Reservoir Characterization: Carbonate Rocks	3 cr.
CHEN 696	Reservoir Modeling	3 cr.
CHEN 697	Reservoir Economics and Risk Management	3 cr.
CHEN 798A	Waste Minimization in the Process Industry	3 cr.

BE in Chemical Engineering: Curriculum Plan

First Year (31 credits)

Term I (Fall)		**Credits**
FEAA200	Introduction to Engineering and Architecture	3
CIVE 210	Statics	3
EECE 210	Electric Circuits	3

MECH 220	Engineering Graphics	1
MATH 201	Calculus and Analytic Geometry III	3
ENGL 203	Academic English (Understanding Communication)	3
		Total 16
Term II (Spring)		**Credits**
CHEN 201	Chemical Process Principles	3
CHEN 214	Thermodynamics I	3
STAT 230	Introduction to Probability and Random Variables	3
ENGL 206	English Technical Writing (Understanding Communication)	3
MATH 202	Differential Equations	3
		Total 15

Second Year (42 credits)

Term III (Summer)		**Credits**
Arabic Elective	Understanding Communication - Arabic	3
CHEM 204	Physical Chemistry for Chemical Engineers	2
CHEM 207	Survey of Organic Chemistry and Petrochemicals	4
		Total 9
Term IV (Fall)		**Credits**
CHEN 311	Introduction to Fluids Engineering	3
CHEN 314	Chemical Engineering Thermodynamics	3
CHEN 351	Process Instrumentation and Measurements	3
ECON 212	Elementary Macroeconomics Theory	3
MATH 218	Elementary Linear Algebra with Applications	3
EECE 231	Introduction to Programming Using C++ and MATLAB	3
		Total 18
Term V (Spring)		**Credits**
CHEM 219	Analytical and Instrumental Chemistry for Chemical Engineers	**3**
CHEN 312	Separation Processes	**3**
CHEN 415	Mechanical Unit Operations	**3**
MATH 251	Numerical Computing	**3**
Societies and Individuals Elective		**3**
		Total 15

Third Year (40 credits)

Term VI (Summer)		**Credits**
Cultures and Histories (History of Ideas)		3
Understanding the World Elective (approved list)		3
		Total 6
Term VII (Fall)		**Credits**
CHEN 310	Transport Phenomena Lab	2
CHEN 411	Heat and Mass Transfer Operations	3
CHEN 417	Reaction Engineering and Reactor Design	3
CHEN 470	Chemical Process Design	3
CHEN 480	Safety and Loss Prevention	3
Human Values Elective		3
		Total 17
Term VIII (Spring)		**Credits**
CHEN 410	Unit Operations Lab	2
CHEN 431	Materials Engineering & Corrosion	3
CHEN 451	Process Control	3
CHEN 541	Biochemical and Bioprocess Engineering	3
Community Engaged Learning Technical Elective I		3
Cultures and Histories		3
		Total 17

Fourth Year (30 credits)

Term IX (Summer)		**Credits**
CHEN 500	Approved Experience	0
Term X (Fall)		**Credits**
CHEN 501	Final Year Project I	3
CHEN 570	Process Synthesis and Optimization	3
	Cultures and Histories Elective	3
CHEN 571	Chemical Product Design	3
INDE 302	Operations Research I	3
		Total 15

Term XI (Spring)		Credits
CHENxxx	Technical Elective II	3
CHENxxx	Technical Elective III	3
CHENxxx	Technical Elective IV	3
CHEN 502	Final Year Project II	3
Understanding the World Elective (approved list)		3
		Total 15

Bachelor of Science (BS)

Major: Chemical Engineering

Mission

The mission of Chemical Engineering in MSFEA is to provide a stimulating and supportive environment for quality education to prepare graduates for career opportunities in a rapidly changing world by fostering the development of professionalism, leadership qualities and ethical behavior, and to contribute to expanding knowledge in chemical engineering and its related fields.

Program Educational Objectives

Our graduates will be able to:

- advance successfully in their careers as reflected in continued employment, job satisfaction, leadership responsibilities and professional recognition while always maintaining ties with the University;
- apply their scientific knowledge and engineering skills in graduate studies and/or industry; and
- be professionals who recognize the broader aspects of engineering practice including economic, environmental, social, political, safety and sustainability constraints.

Bachelor of Science Program Requirements

The undergraduate curriculum for the degree of Bachelor of Science (BS) in Chemical Engineering is a four-year program. It consists of 140 term credit hours of coursework, of which 30 credits are completed in the freshman year while the student is enrolled in the Faculty of Arts and Sciences, and of which 110 credits are completed in three years while

the student is enrolled in the Maroun Semaan Faculty of Engineering and Architecture. Students who are admitted at the sophomore level will be required to complete 110 credits in three years to earn the degree as outlined here:

General Engineering Fundamentals (13 credits)

FEAA 200	Introduction to Engineering and Architecture	3 cr.
CIVE 210	Statics	3 cr.
EECE 210	Electric Circuits	3 cr.
EECE 231	Introduction to Programming Using C++ and MATLAB	3 cr.
MECH 220	Engineering Graphics	1 cr.

Mathematics (15 credits)

MATH 201	Calculus and Analytic Geometry III	3 cr.
MATH 202	Differential Equations	3 cr.
STAT 230	Introduction to Probability and Random Variables	3 cr.
MATH 218	Elementary Linear Algebra with Applications	3 cr.
MATH 251	Numerical Computing	3 cr.

Sciences (9 credits)

CHEM 204	Physical Chemistry for Chemical Engineers	2 cr.
CHEM 207	Survey of Organic Chemistry and Petrochemicals	4 cr.
CHEM 219	Analytical and Instrumental Chemistry for Chemical Engineers	3 cr.

General Education (27 credits) beyond Freshman at 200 Level

Given the current AUB General Education requirements, as stipulated in the Undergraduate Catalogue, students are required to complete 9 credits in Cultures and Histories (including one History of Ideas), 3 credits in Human Values, 6 credits in Societies and Individuals, one is ECON 212, and the second should reflect Social inequalities, 6 credits in Understanding Communication - English: ENGL 203 and ENGL 206, and 3 credits in Understanding Communication - Arabic. The course CHEN 401 will cover the community engaged learning requirement.

Core Chemical Engineering Courses (46 credits)

CHEN 201	Chemical Process Principles	3 cr.
CHEN 214	Thermodynamics I	3 cr.
CHEN 310	Transport Phenomena Lab	2 cr.

CHEN 311	Introduction to Fluids Engineering	3 cr
CHEN 312	Separation Processes	3 cr.
CHEN 314	Chemical Engineering Thermodynamics	3 cr.
CHEN 351	Process Instrumentation and Measurements	3 cr.
CHEN 400	Approved Experience	0 cr.
CHEN 401	Final Year Project	3 cr.
CHEN 410	Unit Operation Lab	2 cr.
CHEN 411	Heat and Mass Transfer Operations	3 cr.
CHEN 415	Mechanical Unit Operations	3 cr.
CHEN 417	Reaction Engineering and Reactor Design	3 cr.
CHEN 451	Process Control	3 cr.
CHEN 470	Chemical Process Design	3 cr.
CHEN 480	Safety and Loss Prevention	3 cr.
CHEN 541	Biochemical and Bioprocess Engineering	3 cr.

BS in Chemical Engineering: Curriculum Plan

First Year (31 credits)

Term I (Fall)		**Credits**
MATH 201	Calculus and Analytic Geometry III	3
CIVE 210	Statics	3
EECE 210	Electric Circuits	3
MECH 220	Engineering Graphics	1
ENGL 203	Academic Writing (Understanding Communication)	3
FEAA 200	Introduction to Engineering and Architecture	3
		Total 16
Term II (Spring)		**Credits**
CHEN 201	Chemical Process Principles	3
MATH 202	Differential Equations	3
STAT 230	Introduction to Probability and Random Variables	3
CHEN 214	Thermodynamics I	3
ENGL 206	English Technical Writing (Understanding Communication)	3
		Total 15

Second Year (45 credits)

Term III (Summer)		**Credits**
Arabic Elective	(Understanding Communication-Arabic)	3
CHEM 204	Physical Chemistry for Chemical Engineers	2
CHEM 207	Survey of Organic Chemistry and Petrochemicals	4
		Total 9
Term IV (Fall)		**Credits**
ECON 212	Elementary Macroeconomics Theory	3
CHEN 311	Introduction to Fluids Engineering	3
CHEN 314	Chemical Engineering Thermodynamics	3
CHEN 351	Process Instrumentation and Measurements	3
EECE 231	Introduction to Programming Using C++ and MATLAB	3
MATH 218	Elementary Linear Algebra with Applications	3
		Total 18
Term V (Spring)		**Credits**
CHEM 219	Analytical and Instrumental Chemistry for Chemical Engineers	3
CHEN 312	Separation Processes	3
CHEN 415	Mechanical Unit Operations	3
MATH 251	Numerical Computing	3
Societies and Individuals Elective		3
Cultures and Histories (History of Ideas)		3
		Total 18

Third Year (34 credits)

Term VI (Summer)		**Credits**
CHEN 400	Approved Experience	0
Term VII (Fall)		**Credits**
CHEN 310	Transport Phenomena Lab	2
CHEN 411	Heat and Mass Transfer Operations	3
CHEN 417	Reaction Engineering and Reactor Design	3

CHEN 470	Chemical Process Design	3
CHEN 480	Safety and Loss Prevention	3
Human Values Elective		3
		Total 17
Term VIII (Spring)		**Credits**
CHEN 401	Final Year Project	3
CHEN 410	Unit Operations Lab	2
CHEN 451	Process Control	3
CHEN 541	Biochemical and Bioprocess Engineering	3
Cultures and Histories Elective		3
Cultures and Histories Elective		3
		Total 17

Minor in Chemical Engineering

The minor in Chemical Engineering is open to Engineering students in majors other than chemical engineering who have finished their first two academic years in Engineering. Only students who have a GPA of 2.3 or more are eligible to apply for the minor.

Minor Program Requirements (21 credits)

Students taking the minor are required to complete 21 credits from the list given below. The student has to complete 15 credits of core courses and 6 credits of elective courses.

Please refer to the General University Academic Information section of the catalogue for more information regarding Minors.

Required Core Courses (15 credits)		
CHEN 214	Thermodynamics I	3 cr.
CHEN 311	Introduction to Fluids Engineering	3 cr.
CHEN 312	Separation Processes	3 cr.
CHEN 411	Heat and Mass Transfer Operations	3 cr.
CHEN 417	Reaction Engineering and Reactor Design	3 cr.
Elective Courses (6 credits)		
CHEN 314	Chemical Engineering Thermodynamics	3 cr.
CHEN 415	Mechanical Unit Operations	3 cr.
CHEN 451	Process Control	3 cr.

CHEN 470	Chemical Process Design	3 cr.
CHEN 480	Safety and Loss Prevention	3 cr.
CHEN 490	Fundamentals of Petroleum Engineering	3 cr.
CHEN 570	Process Synthesis and Optimization	3 cr.
CHEN 571	Chemical Product Design	3 cr.
CHEN 612	Desalination	3 cr.
CHEN 672	Polymer Science	3 cr.
CHEN 673	Engineering of Drug Delivery Systems	3 cr.

Minor in Petroleum Engineering

Minor Program Requirements (18 Credits)

The minor in Petroleum Engineering is open to AUB students from all majors who have finished their first academic year (non-engineering students) or their first two academic years (engineering students) and who have attained a GPA of 2.3.

Please refer to the General University Academic Information section of the catalogue for more information regarding Minors.

Required Core Courses (9 Credits)		
PETR 200/ CHEN 490	Introduction to Petroleum Engineering	3 cr.
Two courses from the following list:		
PETR 322/ CHEN 595	Drilling Engineering I	3 cr.
PETR 421/ CHEN 690	Reservoir Engineering	3 cr.
PETR 432/ CHEN 592	Production Engineering	3 cr.
PETR 312/ CHEN 593	Reservoir Petrophysics	3 cr.
Elective Courses (9 Credits) Selected from the following courses:		
PETR 300	Petroleum Exploration	3 cr.
PETR 321/ CHEN 594	Reservoir Fluids	3 cr.
PETR 520/ CHEN 696	Reservoir Modeling	3 cr.

PETR 514/ CHEN 697	Reservoir Economics and Risk Management	3 cr.
CHEN 480	Safety and Loss Prevention	3 cr.
CHEN 590	Petroleum Refining	3 cr.
CHEN 591	Natural Gas Processing	3 cr.
MECH 768	Transport Through Porous Media	3 cr.
GEOL 225	Petroleum Geology	3 cr.
GEOL 226	Introduction to Geophysics	3 cr.

Note: Other courses may be approved as minor equivalents at consent of the B. & W. Bassatne Department of Chemical Engineering and Advanced Energy. Students cannot receive more than 6 credits for both PETR/CHEN cross-listed courses as technical electives in the chemical engineering major. When students take 2 out of the 4 core courses from the core courses list, the other 2 courses can be taken as electives for the minor.

Course Descriptions

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture, including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It has an interdisciplinary nature bringing ideas and solutions from all disciplines in engineering and architecture. Annually.

CHEN 201 Chemical Process Principles 3 cr.
This course is an introduction to the most important processes employed by the chemical industries, such as plastics, pharmaceutical, chemical, petrochemical and biochemical. Major emphasis is on formulating and solving material and energy balances for simple and complex systems. Equilibrium concepts for chemical process systems are developed and applied. Computer software is utilized extensively. The course activities include guest speakers and plant trips.

CHEN 214/MECH 310 Thermodynamics I 3 cr.
This course seeks to provide a methodology by which students view objects in the physical universe as “systems” and apply to them the basic laws of conservation of mass, energy, and the entropy balance. The course covers the thermodynamic state and properties of a pure substance, energy and mass conservation, entropy and the second law. Applications involve closed setups and flow devices and simple vapor and liquid cycles.

CHEN 310 Transport Phenomena Lab 2cr.
This lab includes experimentation in thermodynamics and heat, mass and momentum transport on a bench scale; and measurement error estimation and analysis. Prerequisites: CHEN 214 or MECH 310, and CHEN 311.

CHEN 311/ MECH 314 Introduction to Fluids Engineering 3 cr.
An introductory course on fluid behavior emphasizing conservation of mass, momentum, energy and dimensional analysis; study of fluid motion in terms of the velocity field, fluid acceleration, pressure field and viscous effects; applications of Bernoulli's equation, Navier-Stokes and modeling; flow in ducts, potential flows and boundary layer flows. Prerequisites: CHEN 214 or MECH 310, and CIVE 210.

CHEN 312 Separation Processes 3 cr.
This course includes the design of industrial separation equipment using both analytical and graphical methods; equilibrium-based design techniques for single and multiple stages in distillation, absorption/stripping and liquid-liquid extraction are employed; and an introduction to gas-solid and solid-liquid systems is presented as well. Mass transfer considerations are included in efficiency calculations and design procedures for packed absorption towers, membrane separations and adsorption. Ion exchange and chromatography are discussed. The role of solution thermodynamics and the methods of estimating or calculating thermodynamic properties are also studied. Degrees of freedom analyses are threaded throughout the course as well as the appropriate use of software. Prerequisite: CHEN 314; Pre or co-requisite: MECH 220.

CHEN 314 Chemical Engineering Thermodynamics 3 cr.
This course addresses the principles of classical thermodynamics and focuses on applying them to various unit operations and chemical processes. The course will begin with a review of the first and second laws and their application to closed and open systems. Power and refrigeration cycles are covered. Equations of state (virial, PR, SRK) are detailed. Starting with ideal gas mixtures and ideal solutions, the concepts of bubble and dew points are introduced to enable flash calculations and design of process components. Prerequisites: CHEN 201, CHEN 214 or MECH 310, and MATH 202.

CHEN 351/MECH 430 Process Instrumentation and Measurements 2.1; 3 cr.
A course on general concepts of measurement systems, classification of sensors and sensor types, interfacing concepts, data acquisition, manipulation, transmission and recording; introduction to LABVIEW, applications, team project on design and implementation of a measuring device. Prerequisites: EECE 210, STAT 230 and MATH 202.

CHEN 400 Approved Experience 0 cr.; 1 b
This is an eight-week professional training course in chemical engineering for students enrolled in the BS program.

CHEN 401 Final Year Project 3 cr.
The Final Year Project provides collaborative design experiences with a problem of industrial or societal significance. Projects can originate with an industrial sponsor, from an engineering project on campus, or from other industrial or academic sources. In all cases, a project is a capstone experience that draws extensively from the students' engineering and scientific background and requires independent judgments and actions. The projects generally involve a number of unit operations, a detailed economic analysis, simulation, use of industrial economic and process software packages, and experimentation and/or prototype construction. Prerequisites: CHEN 470, CHEN 411 and CHEN 480.

CHEN 410 Unit Operations Lab 2 cr.
This laboratory introduces students to basic concepts, experimental techniques and calculation procedures in unit operations. Experiments include fluid dynamics, heat exchange (pilot-scale units designed to study air-solid, steam-water, water-water heat transfer), cooling towers, gas absorption, solvent extraction, ultrafiltration of hemoglobin solutions in water, chemical reactions (to study stoichiometry and kinetics of batch reactions in the liquid phase), drying of solid materials and distillation. Some reaction kinetics experiments and flow pattern in industrial process equipment are also included. Prerequisites: CHEN 310, CHEN 312, CHEN 411 and CHEN 417.

CHEN 411 Heat and Mass Transfer Operations 3 cr.
The course covers heat conduction, convection and radiation; general differential equations for energy transfer; conductive and convective heat transfer; radiation heat transfer; process heat exchangers; molecular, convective and interface mass transfer; the differential equation for mass transfer; steady state molecular diffusion and film theory; convective mass transfer correlations; and mass transfer equipment. Prerequisites: CHEN 214 or MECH 310, and CHEN 311.

CHEN 415 Mechanical Unit Operations 3 cr.
This course introduces students to the principles and practices involved in contacting, conveying, separating, and storing single and multiphase systems. It includes the flow of incompressible fluids in conduits and past immersed bodies; as well as the transportation, metering and mixing of fluids. Unit operations involved in the contacting and physical separation of phases, such as fluidization; sedimentation and centrifugation; evaporation and membrane separation are also studied. Prerequisite: CHEN 311; pre or co-requisite: CHEN 312.

CHEN 417 Reaction Engineering and Reactor Design 3 cr.
This course introduces the subject of chemical reaction engineering and reactor design. Classical reaction kinetics concerning rates, mechanisms, temperature effects and multiple reactions are studied. The concepts of batch, continuous stirred-tank and plug flow reactors are introduced for the ideal case. Non-isothermal reactors and non-ideal flow are considered in the design of chemical reactor systems. Heterogeneous reactors and catalysis are also discussed. Prerequisites: CHEN 314, MATH 251 and CHEM 204.

CHEN 431 Materials Engineering and Corrosion 3 cr.
This course covers: Materials engineering; Properties and performance; Crystalline phases; Imperfection in crystalline solids; Solid solution; Elastic and Plastic deformation; Hardness testing; Fatigue and creep testing; Phase diagrams, engineering alloys and Corrosion. Prerequisite: CHEN 214 or MECH 310.

CHEN 451 Process Control 3 cr.
A course covering the concepts of feedback control systems in the chemical and process industry. The course involves dynamic modeling, design and analysis of dynamic control systems. The course is synchronized with a laboratory component, CHEN 451L, which provides hands-on experience with various control applications. Prerequisites: CHEN 312 and CHEN 351.

CHEN 470 Chemical Process Design 3 cr.
This course is an integration of material from other chemical engineering courses with applications to the design of plants and processes representative of the chemical and related process industries; basic concepts and methodology for making rational decisions; and the implementation of real engineering projects and comparing alternatives. Prerequisite: CHEN 312; pre or corequisites: CHEN 411 and CHEN 417.

CHEN 480 Safety and Loss Prevention 3 cr.
Topics covered in this class include: history of health and safety; causes and effects of loss; policy development; loss control and health basics; emergency preparedness and standards; hazard identification; safe process design; inspection and investigation processes; measurement, evaluation and audits of OH&S program elements; legislation, HAZOP and HAZAN. Prerequisite: CHEN 312.

CHEN 500 Approved Experience 0 cr.; 1 b
This is an eight-week professional training course in chemical engineering for students enrolled in the BE program. Prerequisite: CHEN 470

CHEN 501 Final Year Project I 3 cr.
The Final Year Project provides collaborative design experiences with a problem of industrial or societal significance. Projects can originate with an industrial sponsor or from other industrial or academic sources. Prerequisites: CHEN 470, CHEN 411, CHEN 480, and CHEN 500.

CHEN 502 Final Year Project II 3 cr.
This course will be a continuation of CHEN 501 where students will employ their acquired knowledge to investigate the design of overall processes and the detailed design of individual unit operations, perform economic analysis and use industrial economic and process software packages, experimentation and/or prototype construction integrating safety and environmental issues to produce the final optimized design and/or product. Prerequisite: CHEN 501.

CHEN 541 Biochemical and Bioprocess Engineering 3 cr.
This course will be taught in two stages. In the first stage, elementary biochemistry of living organisms, with emphasis on the biochemical pathways that bring about growth and cellular energy production, is presented along with enzyme kinetics and microbial growth models. In the second stage, bioreactors used to bring about the biomass growth either for metabolite production or for degradation are studied. Mass balances and design equations incorporating cellular kinetics and concepts are presented for batch and continuous stirred tank reactors. Vapor phase, fixed-bed reactor designs, such as biofilters, are presented as applications in air pollution control. Prerequisites: CHEN 312 and CHEN 417.

CHEN 570 Process Synthesis and Optimization 3 cr.
An introduction to the design and synthesis of large scale production and processing of materials such as water, chemicals, petroleum products, food, drugs and wastes. The course introduces principles of optimization: continuous, linear and nonlinear, and mixed-integer linear and nonlinear problems. Applications to heat exchanger network synthesis, energy systems design, distillation and separation systems selection, optimization and design under uncertainty. Prerequisites: CHEN 411, CHEN 451 and CHEN 470.

CHEN 571 Chemical Product Design 3 cr.
This course covers the application of the design process to products based on chemical technology. It covers the entire design process from initial identification of product needs, to the generation and selection of product ideas, and culminates in the manufacture of a new product. Prerequisite: CHEN 470.

Chemical Engineering Technical Electives

CHEN 413 Water and Waste Treatment 3 cr.
A course that examines the quality and treatment methods of water and wastewater; testing for physical, chemical and biological parameters. Prerequisite: Consent of instructor.

CHEN 499 Undergraduate Research 3 cr.
This course requires participation, under supervision of a faculty member, in a research project. Before registering, the student must create a proposal regarding the nature of the research, the specific goals of the research and the desired final report outcome; this proposal must be submitted to and approved by the supervising faculty member and the department before registering. Prerequisites: Completion of term IX required in the major and a cumulative average of 80 (GPA:3.2) or above.

CHEN 590 Petroleum Refining 3 cr.
General review of refining processes of crude oil; shortcut methods for practical design calculations; design of atmospheric, vacuum and pressure columns for petroleum fractionation, including auxiliary furnaces and condensers; recent developments in heavy oil processing. Prerequisite: CHEN312

CHEN 591 Natural Gas Processing 3 cr.
Natural gas properties including real gas mixtures behavior and the equations of state. Natural gas water systems, natural gas condensate systems, hydrate formation and inhibition. Separation processes. Field treatment of natural gas, absorption, and adsorption processes. Natural gas dehydration, sweetening and sulfur recovery. Design and sizing of the main equipment. Pre or co-requisite: CHEM 204, CHEN 311, CHEN 312 and CHEN 314.

CHEN 610 Materials Design and Characterization 3 cr.
This course is designed for chemical engineering students who want to gain knowledge and technical exposure with modern analytical instrumentation used in research and industry. The course will cover the theoretical and scientific aspects involved in analytical applications including: spectroscopy, chromatography, X-ray diffraction etc. It also encompasses laboratory sessions for sample preparation and instrumental operation, analytical method optimization and data interpretation. At the end of the course, students will become familiar with various analytical instruments and methods, and they will be able to decide on the appropriate instrument to carry out specific laboratory analysis for the development and characterization of novel material. Prerequisites: CHEM 219 and CHEN 410.

CHEN 611 Transport Phenomena 3 cr.
This course covers applications of the principles of momentum, heat and mass transfer to steady state and transient problems; molecular concepts; transport in turbulent flow; boundary layer theory; and numerical applications. Prerequisite: CHEN411 or MECH 412.

CHEN 612 Desalination 3 cr.
This course will survey the commonly used thermal and membrane based desalination technologies. Fundamental thermodynamic and transport processes which govern desalination will be developed. Environmental, sustainability and economic factors which may influence the performance, affordability and more widespread use of desalination systems for fresh water production and reuse will be highlighted. Renewable energy technologies coupled with desalination processes will be reviewed. A team-based student project to design a reverse osmosis membrane desalination plant (brackish water, seawater

or treated sewage effluent) using conventional or alternative energy sources. Prerequisite: CHEN 411 or MECH 412.

CHEN 613 Membrane Separation Processes 3 cr.
The course will provide a general introduction to membrane science and technology: transport mechanisms, membrane preparation and boundary layer effects. The course will also cover various types of membranes used in industry: microfiltration, ultrafiltration, reverse osmosis, electro-dialysis and pervaporation. Prerequisites: CHEN 312 and CHEN 411.

CHEN 614 Environmental Engineering Separation Processes 3 cr.
This course includes a discussion of the unit operations associated with environmental engineering separation processes of solid-liquid, liquid-liquid and gas-liquid systems; general use, principles of operation and design procedures for specific types of equipment. Prerequisite: Consent of instructor.

CHEN 615 Advanced Mass Transfer 3cr.
This course is a review of molecular and turbulent diffusion and mass transfer coefficients, mass transfer equipment design including absorption and cooling towers, adsorption and ion exchange. Prerequisite: CHEN 411 or MECH 412.

CHEN 617 Chemical Reactor Analysis and Design 3cr.
An advanced treatment of chemical reactors. This course covers design for optimum selectivity, stability and transient behavior of the mixed flow reactor, non-ideal flow and balance models, fixed and fluidized bed reactors, and multiphase flow reactors. Prerequisite: CHEN 417.

CHEN 618 Colloid and Interface Science 3 cr.
This course aims at introducing the basic concept of colloid and interface science, properties, behavior and interactions. It explores the application of surface and colloid chemistry principles to technologies involving particulate dispersions, emulsions, foams, aerosols, water-soluble polymers, wetting, flocculation, flotation, separation and stabilization. The goal is to provide background in surface and colloidal science and give students a solid framework for applying knowledge in colloid and surface science to the solution of practical problems and the development of new technologies. Prerequisite: CHEN 314 or MECH 414.

CHEN 619 Sustainability Science: Human and Environment Interaction 3 cr.
Sustainability is the grand challenge of our time especially with the UN SDG (Sustainable Development Goals) 2030 Agenda. This course addresses the basics of sustainability science and its challenges to promote economic growth and address social needs, while tackling climate change and environmental protection. The goal of the course is to introduce students to the four pillars of sustainability (human, economic, social, environmental) and help them incorporate its principles and models into engineering design practices. Students will be also introduced to current challenges, active debates and unresolved research questions in sustainability.

CHEN 620 Reaction Engineering and Reactor Design II 3 cr.
The course presents advanced concepts of reaction engineering and reactor design. The course covers fundamentals of heterogeneously catalyzed chemical reactions including kinetics and transport processes. The Reactor design part of the course focuses on the modeling of catalytic reactors. Prerequisite: CHEN 417.

CHEN 630 Sustainable Biorefinery Process 3 cr.
This course provides students with an understanding of the principles, technologies and design of sustainable bioprocesses and biorefineries. In this course we will focus on techniques and processes needed to efficiently disentangle, separate and convert different biomass based feedstock into biofuels and high value chemicals. We will also explore the design of a biorefinery taking into account feedstock and the desired product. The design will be evaluated with respect to sustainability and economic criteria. The students will have the opportunity to work in a team on a feasibility/ simulation/ experimental project. Prerequisite: CHEN 417.

CHEN 651 Advanced Process Control 3cr.
This course covers the mathematical modeling and computer simulation of process dynamics and control. Prerequisite: CHEN 451.

CHEN 670 Advanced Process Flow-Sheeting 3cr.
This course highlights the engineering tools used during the lifecycle of chemical plants from the Front-End and Engineering Design (FEED) stage to operation. Flow- sheeting tools will be used for analysis, dynamic modeling for startup-shutdown and control dynamics, and plant-wide optimization for plant performance improvement. Prerequisite: CHEN 570.

CHEN 672 Polymer Science 3cr.
This course is a broad technical overview of the nature of synthetic macromolecules, including the formation of polymers and their structure, structure-property relationships, polymer characterization and processing, and applications of polymers. The course tends to focus on thermoplastic polymers and elastomers. Prerequisite: CHEN 431 or MECH 340.

CHEN 673/ BMEN 604 Engineering of Drug Delivery Systems 3 cr.
This course focuses on recent advances in the development of novel drug delivery systems. The fundamentals of drug delivery are discussed. Various strategies to tune and control the release of active agents for optimized therapeutic outcomes are explored. The course covers polymers and techniques used to produce drug nanoparticles, with specific examples of nanoparticle-based drug delivery systems. Prerequisites: CHEN 314 or MECH 414, and CHEN 411 or MECH 412.

CHEN 674 Process Operations and Diagnosis 3 cr.
This course covers troubleshooting, fault detection and diagnostics in key chemical processes. Statistical tools such as Principle Component Analysis, Fisher Discriminant Analysis, Partial Least Squares and Canonical Variate Analysis methods are studied. Analytical and knowledge based approaches are also covered. Processes and case studies include: gas-oil separation (GOSP), natural gas processing (AGR, NGL, SRU, fractionation, amine scrubbing), crude oil refining (CDU, VDU, delayed cocking, fluid catalytic cracking) and power plants. Prerequisites: CHEN 451 and CHEN 570.

CHEN 675/ BMEN 603 Tissue Engineering 3 cr.

Tissue engineering is an interdisciplinary field that uses cells, biomaterials, biochemical (e.g. growth factors) and physical (e.g. mechanical stimulation) signals, as well as their combination to generate tissue-like structures. The goal of tissue engineering is to provide biological substitutes that can maintain, restore or improve the function of damaged tissues in the body.

CHEN 691 Reservoir Characterization: Carbonate Rocks 3 cr.
This course is an introduction to the common, modern approaches to the characterization of carbonate reservoirs. State-of-the-art petrographic tools will be introduced. The major depositional environments of carbonate rocks and carbonate platform types as well as the principal controls on carbonate sedimentation will be highlighted. Diagenesis (modification of reservoir properties through time) will be discussed through related processes and products, including the process of dolomitization. In-depth coverage of secondary porosity evolution in carbonate reservoirs will be provided (including elements of appropriate rock-typing). A team based project to solve a case study in reservoir characterization as well as a field trip to provide a practical view of carbonate reservoir rocks will be included. Prerequisite: CHEN 490.

CHEN 798A Waste Minimization in the Process Industry 3 cr.
The objective of this course is to become familiar with waste minimization principles, quality management systems and pollution control and legislation. The course contents include: introduction and background to waste minimization, benefits of waste minimization, implementation of a waste minimization program, practical techniques to minimize waste, methodology of waste minimization, typical causes and sources of waste and examples of practical waste minimization techniques.

PETR 200/ CHEN 490 Introduction to Petroleum Engineering 3 cr.
This course gives an overview on the hydrocarbon reservoirs lifecycle starting from the exploration stage till the production and reservoir management stage. It will introduce students to the fundamental concepts of petroleum engineering including petroleum geosciences, drilling engineering, formation evaluation, reservoir engineering, production engineering and hydrocarbon reservoirs economic evaluation. As an outcome of this course, students will gain a foundational understanding of the upstream petroleum industry and get accustomed to its integrated nature, involved terminology and multiple disciplines. Students cannot receive credits for both CHEN 490 and PETR 200.

PETR 300 Petroleum Exploration 3 cr.
This course focuses on the major foundational concepts about how the Earth works as an integrated system and, particularly, how petroleum systems operate within an important part of the crust, sedimentary basins. Also throughout the course, relevant aspects of geoscience are discussed, and impacts of these concepts on various exploration and reservoir development activities are emphasized. Importance of real rock samples, the processes of deposition, subsurface imaging and evaluation of petrophysical properties are discussed. Effect of heterogeneities on fluid distribution and flow, and relations between engineering concepts and geological structures will be introduced. Prerequisite: PETR 200 or CHEN 490.

PETR 312/ CHEN 593 Reservoir Petrophysics 3 cr.
This course provides students with a systematic understanding of physical properties of petroleum reservoir rocks: lithology, porosity, relative and effective permeability, fluid saturations, capillary characteristics, compressibility, rock stress and fluid-rock interaction. The different sources of formation evaluation data acquired to characterize oil and gas reservoirs will be introduced together with the process through which data is interpreted to estimate the reservoir properties.

PETR 321/ CHEN 594 Reservoire Fluids 3 cr.
This course discusses the different types of reservoir fluids and their related fundamental thermodynamics properties. It will equip students with practical understanding of oil and gas reservoir fluids properties and related behavior as applied to reservoir and production

engineering studies. The different types of experimental data acquired and used to build PVT models for reservoir and production system simulation. Prerequisite: CHEN 214 or MECH 310.

PETR 322/ CHEN 595 Drilling Engineering I 3 cr.
This course acquaints students with the terminology, concepts, equipment, techniques, and processes used in the oil and natural gas well drilling operations.

PETR 421/ CHEN 690 Oil and Gas Reservoir Engineering 3 cr.
This course covers both fundamental and applied reservoir engineering concepts. It aims at understanding the rock and fluid properties and how these properties interact to affect production from a hydrocarbon reservoir. From a practical perspective, the course focuses on classical reservoir engineering, reservoir drive mechanisms, well testing and well test analysis as well as the use of reservoir simulation to assist the reservoir engineer at different stages of a hydrocarbon reservoir lifecycle.

PETR 432/ CHEN 592 Production Engineering 3 cr.
The course covers the principles and methods used to produce oil and natural gas from the reservoir to surface facilities. It provides techniques for predicting the flow within the system including reservoir and wellbore hydraulics. Performance analysis methods and equipment used are discussed along with methods to enhance well performance.

PETR 514/ CHEN 697 Reservoir Economics and Risk Management 3 cr.
Review of financial concepts and economic evaluation techniques and related financial concepts used in the oil and gas upstream business to assist decision-making on either the investment of capital or the divestment of assets. The course will focus on the conversion of hydrocarbon volumes to 'monetary value' and the requirement for consistent means of determining both the absolute and relative attractiveness of investment opportunities, from new field developments to portfolio management decisions. Prerequisite: PETR 421 or CHEN 690.

PETR 520/ CHEN 696 Reservoir Modeling 3 cr.
This course introduces students to the theory and practice of hydrocarbon reservoir simulation. It details the mathematics of the governing equations and numerical techniques that form reservoir simulation models. The course will cover data preparation, simulation grid preparation, reservoir model calibration, forecasting of future performance, and interpretation of simulation results. Students will learn about the elements of a reservoir simulation model, the types of reservoir simulators and the role of simulation in field development planning, reservoir management and production optimization. Prerequisites: PETR 421 or CHEN 690.

Department of Civil and Environmental Engineering

Chairperson:	Mabsout, Mounir
Professors:	Basha, Habib; Hamad, Bilal; Harajli, Muhamad; Mabsout, Mounir; Najjar, Shadi; Sadek, Salah; Srour, Issam
Associate Professors:	Abou Zeid, Maya; Hantouche, Elie; Khoury, Hiam; Salam, Darine
Assistant Professors:	Bilbeisi, Rana; Dabaghi, Mayssa; Yehya, Alissar; Yeretzian, Aram (jointly with ArD)
Part-Time Professor:	Ayoub, George
Adjunct Professors:	Abdul Malak, Mohamed-Asem; Alameddine, Ibrahim; El Fadel, Mutasem; Kaysi, Isam
Senior Lecturer:	Basha, Hisham
Part-Time Senior Lecturer:	Fawwaz, Youssef
Part-Time Lecturers:	Al Naghi, Hani; Demachkieh, Farah; El Meski, Fatima; Elsouri, Amer; Hatem Mousallem, Manal; Malaeb, Lilian; Nader, Halim
Part-Time Instructors:	Abboud, Pamela; Hage Ali, Nadine
Laboratories:	Al Hassanieh, Dima; El Khatib, Helmi; El Zein, Leticia; Zayyat, Ramez

Undergraduate Programs

The Department of Civil and Environmental Engineering (CEE) offers the degrees of Bachelor of Engineering (BE) with the major of Civil Engineering (CE) and Bachelor of Science (BS) with the major of Construction Engineering (ConsE).

The mission of the CE undergraduate programs is to provide a stimulating and supportive environment for high-standard education and research; to prepare graduates for life-long learning and productive careers, while instilling in them an appreciation of leadership qualities, professionalism, and ethics; to provide professional services of the highest quality to the community; and to contribute, through teaching and research, to expanding the knowledge and technology base in civil and environmental engineering.

Bachelor of Engineering (BE) Major: Civil Engineering

Program Educational Objectives

The objectives of the CE program are to see our students move on to become:

- **Engineers** who hold central positions, create sustainable and ethical solutions, and advance the knowledge in various sub-disciplines of civil engineering in local, regional, and international practice.
- **Graduates** who are admitted to, and successfully complete, advanced degrees in leading universities around the world.
- **Leaders** and innovators in their profession and in the service of their community.

Curriculum

Term I (Fall)		**Credits**
FEAA 200	Introduction to Engineering and Architecture	3
CIVE 201	Engineering Drawings and Tools	3
MATH 201	Calculus and Analytical Geometry III	3
CHEM 202	Introduction to Environmental Chemistry (or CIVE 251)	3
CHEM 203	Introductory Chemical Techniques (or CIVE 251L)	2
ARAB 2nn	Arabic Elective (Understanding Communication)	3
		Total 17
Term II (Spring)		**Credits**
CIVE 210	Statics	3
MATH 202	Differential Equations	3
PHYS 210	Introductory Physics II	3
PHYS 210L	Introductory Physics Laboratory II	1
ENGL 203	Academic English (Understanding Communication)	3
CHLA 2nn*	Cultures and Histories - History of Ideas Elective	3
		Total 16

Term III (Summer)		**Credits**
CIVE 301	Surveying	2
STAT 230	Introduction to Probability and Random Variables	3
SoIn 2nn*	Societies and Individuals Elective	3
		Total 8
Term IV (Fall)		**Credits**
CIVE 310	Mechanics of Materials	3
CIVE 370	Construction Materials and Technologies	3
EECE 231	Introduction to Programming with C++ and MATLAB	3
ENGL 206	Technical English (Understanding Communication)	3
MATH 2nn	Mathematics Elective	3
CuHi 2nn*	Cultures and Histories Elective	3
		Total 18
Term V (Spring)		**Credits**
CIVE 311	Theory of Structures	3
CIVE 340	Fluid Mechanics and Laboratory	3
MATH 251	Numerical Computing	3
BIOL 2nn	Biology Elective	3
INDE 410	Engineering Ethics (Human Values)	3
CuHi 2nn*	Cultures and Histories Elective	3
		Total 18
Term VI (Summer)		**Credits**
CIVE 330	Engineering Geology (or Geology Elective)	3
INDE 301	Engineering Economy	3
SoIn 2nn*	Societies and Individuals Elective	3
		Total 9
Term VII (Fall)		**Credits**
CIVE 413	Concrete Design I	3
CIVE 430	Soil Mechanics and Laboratory	3
CIVE 440	Hydraulics and Laboratory	3
CIVE 550 or 551	Water Treatment and Laboratory or Wastewater Treatment and Laboratory	3
CIVE 460	Transportation Engineering and Laboratory	3
		Total 15

Term VIII (Spring)		**Credits**
CIVE 421	Construction Management	3
CIVE 411	Indeterminate Structural Analysis	3
CIVE 54n	Hydrology Elective	3
CIVE n5n	Environmental Elective	3
CIVE 461	Highway Engineering	3
		Total 15
Term IX (Summer)		**Credits**
CIVE 400	Approved Experience	0
		Total 0
Term X (Fall)		**Credits**
CIVE 401	Final Year Project I	3
CIVE 41n	Structural Design Elective	3
CIVE 431	Foundation Engineering	3
CIVE 5nn/6nn	CEE Technical Elective	3
CIVE 5nn/6nn	CEE Technical Elective	3
		Total 15
Term XI (Spring)		**Credits**
CIVE 402	Final Year Project II	3
CIVE 42n	Construction Elective	3
CIVE 5nn/6nn	CEE Technical Elective	3
CEE/MSFEA/AUB	CEE or Approved MSFEA/AUB Technical Elective	3
		Total 12
Total Credit Hours:		143
***One of these electives should cover the theme of Social Inequalities.**		

Bachelor of Science (BS)

Major: Construction Engineering (ConsE)

Program Educational Objectives

The objectives of the Construction Engineering program are to see our graduates move on to become:

- **Engineers** who hold central positions in local, regional and international construction engineering practice.
- **Engineers** who are involved in landmark projects and who contribute to the advancement of the local and regional construction industry.
- **Leaders** in their profession and in the service of their community.

Curriculum

Term I (Fall)		**Credits**
FEAA 200	Introduction to Engineering and Architecture	3
CIVE 201	Engineering Drawings and Tools	3
MATH 201	Calculus and Analytical Geometry III	3
CHEM 202	Introduction to Environmental Chemistry (or CIVE 251)	3
CHEM 203	Introductory Chemical Techniques (or CIVE 251L)	2
ARAB 2nn	Arabic Elective (Understanding Communication)	3
		Total 17
Term II (Spring)		**Credits**
CIVE 210	Statics	3
MATH 202	Differential Equations	3
PHYS 210	Introductory Physics II	3
PHYS 210L	Introductory Physics Laboratory II	1
ENGL 203	Academic English (Understanding Communication)	3
CHLA 2nn*	Cultures and Histories - History of Ideas Elective	3
		Total 16

Term III (Summer)		**Credits**
CIVE 301	Surveying	2
STAT 230	Introduction to Probability and Random Variables	3
SoIn 2nn*	Societies and Individuals Elective	3
		Total 8
Term IV (Fall)		**Credits**
CIVE 310	Mechanics of Materials	3
CIVE 370	Construction Materials and Technologies	3
EECE 231	Introduction to Programming with C++ and MATLAB	3
ENGL 206	Technical English (Understanding Communication)	3
MATH 2nn	Mathematics Elective	3
		Total 15
Term V (Spring)		**Credits**
CIVE 311	Theory of Structures	3
CIVE 340	Fluid Mechanics and Laboratory	3
MATH 251	Numerical Computing	3
INDE 410	Engineering Ethics (Human Values)	3
BIOL 2nn	Biology Elective	3
		Total 15
Term VI (Summer)		**Credits**
CIVE 330	Engineering Geology (or Geology Elective)	3
INDE 301	Engineering Economy	3
ECON 212	Elementary Macroeconomic Theory (Societies and Individuals)	3
		Total 9
Term VII (Fall)		**Credits**
CIVE 413	Concrete Design	3
CIVE 421	Construction Management	3
CIVE 430	Soil Mechanics and Laboratory	3
CIVE 440	Hydraulics and Laboratory	3
CuHi 2nn*	Cultures and Histories Elective	3
		Total 15

Term VIII (Spring)		**Credits**
CIVE 422	Construction Methods and Safety	3
CIVE 423	Construction Planning and Scheduling	3
CIVE 522	Building Construction and Estimating	3
CIVE 461	Highway Engineering	3
CuHi 2nn*	Cultures and Histories Elective	3
		Total 15
Term IX (Summer)		**Credits**
CIVE 400	Approved Experience	0
		Total 0
Total Credit Hours:		**110**
***One of these electives should cover the theme of Social Inequalities.**		

Elective Courses

- List of Biology Elective Courses: BIOL 201, BIOL 202, BIOL 209, BIOL 210, BIOL 250, BIOL 252, BIOL 255, BIOL 258, BIOL 259, CIVE 252
- List of Chemistry Elective Courses: CHEM 202, CIVE 251
- List of Chemistry Lab Elective Courses: CHEM 203, CIVE 251L
- List of Construction Elective Courses: CIVE 422, CIVE 423
- List of Environmental Elective Courses: CIVE 451
- List of General Education Elective Courses (Cultures and Histories, History of Ideas, Societies and Individuals): refer to the AUB General Education program.
- List of Geology Elective Courses: GEOL 201, GEOL 211, CIVE 330
- List of Hydrology Elective Courses: CIVE 541, CIVE 542
- List of Mathematics Elective Courses: MATH 211, MATH 212, MATH 218, MATH 281
- List of Structural Design Elective Courses: CIVE 412, CIVE 414.

General Education Requirements

Civil Engineering Major: 9 credits in Cultures and Histories (including one History of Ideas), 3 credits in Human Values (INDE 410), 6 credits in Societies and Individuals, 6 credits in Understanding Communication - English: ENGL 203 and ENGL 206, and 3 credits in Understanding Communication - Arabic. Students must also take a course in Community-Engaged Learning. One elective should cover the theme of Social Inequalities.

Construction Engineering Major: Students are required to complete 9 credits in Cultures and Histories (including one History of Ideas), 3 credits in Human Values (INDE 410), 6 credits in Societies and Individuals, including ECON 212, 6 credits in Understanding Communication - English: ENGL 203 and ENGL 206, and 3 credits in Understanding Communication - Arabic. Students must also take a course in Community-Engaged Learning. One elective should cover the theme of Social Inequalities.

Course Descriptions

Common Courses

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture, including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It is interdisciplinary in nature bringing ideas and solutions from all disciplines in engineering and architecture. Annually.

CIVE 201 Engineering Drawings and Tools 3 cr.
An introductory course that aims to introduce students to the basics of engineering drawing and mapping through the use of Autodesk's Revit and ESRI's ArcGIS software packages.

CIVE 301 Surveying 2 cr.
A course on the theory of measurements and errors; linear measurements; surveying instruments; leveling; angles, bearings and azimuths; stadia measurements; traversing–field aspects; traverse computations and adjustment; topographic surveying; triangulation. Prerequisites: CIVE 201 and CIVE 210.

CIVE 400 Approved Experience 0 cr.
Students are placed for eight full weeks at a recognized consulting and/or contracting firm in Lebanon or abroad in a capacity that ensures they apply their knowledge and acquire professional experience in the field of Civil Engineering. Prerequisite: Fourth year.

CIVE 401 Final Year Project I 3 cr.
A chosen design topic and preparation of a detailed execution program for CIVE 402 through comprehensive research with the guidance and approval of the faculty. Prerequisite: CIVE 400, Fourth year.

CIVE 402 Final Year Project II 3 cr.
A supervised project in groups of normally three students aimed at providing practical design experience in a civil and environmental engineering application. Prerequisite: CIVE 401.

CIVE 403 Special Topics in Civil and Environmental Engineering 3 cr.
Special Topics in Civil and Environmental Engineering

Structural Sequence

CIVE 210 Statics 3 cr.
A course outlining vector mechanics of forces and moments; free-body diagrams; equilibrium of particles and rigid bodies in two and three dimensions; plane and space trusses; frames and machines; axial, shear, moment diagrams of beams and simple frames; friction; center of gravity and centroid; area moment of inertia; computer applications. Pre- or corequisite: MATH 201.

CIVE 310 Mechanics of Materials 3 cr.
A course on stresses, strains and stress-strain relationships; temperature; axial bars in tension and compression; torsion of circular bars; bending and shear stresses in beams; combined stresses; stress transformation and Mohr's circle; and computer spreadsheet. Prerequisite: CIVE 210.

CIVE 311 Theory of Structures 3 cr.
A course covering review of principles of statics; analysis of statically determinate plane frames; deflection of statically determinate beams; introduction to indeterminate structural analysis; influence lines; computer applications; a project on building modeling and assessment. Prerequisites: CIVE 310, MATH 202, PHYS 210 and PHYS 210L.

CIVE 411 Indeterminate Structural Analysis 3 cr.
A course covering review of basic concepts of structural analysis; equilibrium, stability, indeterminacy and degrees of freedom; indeterminate analysis of trusses; indeterminate analysis of beams and frames; influence lines for statically indeterminate structures. Prerequisite: CIVE 311.

CIVE 412 Steel Design 3 cr.
A course that examines loads on structures; philosophies of design: LRFD versus ASD; behavior, analysis and design (according to AISC) of tension members, bolted connections, welded connections, welding fundamentals and groove welds, compression members and beams. Prerequisite: CIVE 311.

CIVE 413 Concrete Design I 3 cr.
A course that covers the mechanical properties of concrete materials; ultimate strength theory of flexure and shear; flexural and shear design of beams; service load behavior; bond properties of reinforcing bars; design of solid and ribbed one-way slabs. Prerequisite: CIVE 311.

CIVE 414 Concrete Design II 3 cr.
A course that covers continuous beams, short columns, lender columns and biaxially bent columns; wall footings, concentrically and eccentrically loaded single column footings and combined footings; staircases; bearing walls; cantilever retaining. Prerequisite: CIVE 413.

CIVE 610 Numerical Methods in Structural Analysis 3 cr.
A course that introduces the matrix approach for the modeling and analysis of structural systems; computer modeling/analysis using specialized software (SAP2000); computer implementation and code development; nonlinear analysis of frames. Prerequisites: CIVE 411 and EECE 231.

CIVE 611 Bridges 3 cr.
A course that discusses types of bridges; influence lines; loads and their distribution on bridges; serviceability of bridges; methods of design of bridge deck, superstructure and substructure. Prerequisite: CIVE 311.

CIVE 612 Advanced Steel Design 3 cr.
A course that investigates stability, column strength, beam-columns, composite steel-concrete construction, plate buckling, plate girders, torsion, and combined torsion and bending; eccentrically loaded connections, influence of connection stiffness on moment demand and general moment connection. Prerequisite: CIVE 412.

CIVE 613 Prestressed Concrete 3 cr.
A course on material characteristics; prestress losses; working strength design procedures; composite construction; ultimate flexural strength and behavior; shear design; continuous pre-stressed concrete members. Prerequisite: CIVE 413.

CIVE 614 Special Topics in Concrete 3 cr.
A course that reviews reinforced concrete (R/C) design; torsion in R/C members; wind load on structures; earthquake load and seismic design of structures; design of shear walls; design of corbels, brackets and deep girders; circular and rectangular water tanks; and spherical, conoidal, and ellipsoidal domes. Prerequisite: CIVE 414.

CIVE 615 Strengthening and Rehabilitation of Concrete Structural Systems 3 cr.
A course on assessment of materials and structural deficiency using field test or analytical methods; repair and strengthening materials; strengthening and repair techniques; strengthening of structural members in flexure, shear and axial load; and upgrading of gravity load-designed buildings for earthquake load resistance. Prerequisites: CIVE 311 and CIVE 413.

CIVE 616 Earthquake Engineering 3 cr.
A course that examines the nature of earthquake ground motion; seismic hazard evaluation in engineering practice; response analysis of structures and effect of soil conditions on structural response and behavior under earthquake ground motion; design of structures under earthquake loading. Prerequisite: CIVE 411.

CIVE 710 The Finite Element Method 3 cr.
A course that introduces basic elements; interpolation and shape functions; variational formulation methods; Galerkin and weighted residual methods; iso-parametric elements; numerical integration; error estimation and modeling issues; finite elements in structural dynamics. Prerequisite: CIVE 610.

CIVE 711 Advanced Mechanics of Solids 3 cr.
A course that covers theories of stress and strain; generalized Hooke's law; modes of failure, failure criteria; energy principles and applications; torsion; beams on elastic foundations; introduction to the theory of plates; thin-wall and thick-wall cylinder. Prerequisite: CIVE 411.

CIVE 712 Structural Dynamics 3 cr.
A course on analysis of vibration of single degree, multi-degree and infinite degree of freedom systems; free and forced vibration response; analysis of dynamic response by approximate methods; introduction to earthquake engineering. Prerequisite: CIVE 411.

CIVE 713 Behavior of Reinforced Concrete Members 3 cr.
A course on building codes; limit state design; mechanical characteristics of concrete and steel reinforcement; creep and shrinkage; flexure: moment-curvature and force-deformation relationships; columns: axial force-moment-curvature relationships; shear: mechanisms of shear resistance; and truss analogy; bond and anchorage of reinforcement. Prerequisite: CIVE 414.

CIVE 714 Seismic Design of Reinforced Concrete Structures 3 cr.
A course on the seismic behavior and design of reinforced concrete structures; introduction to concepts of seismic design and performance-based earthquake engineering; mechanical behavior of steel reinforcement, concrete and confined concrete under monotonic and cyclic loading; seismic behavior, analysis and design of reinforced concrete elements and systems; design of special structural/shear wall systems; design of special moment resisting frames. Prerequisite: CIVE 411 and CIVE 414.

Construction Engineering and Management Sequence

CIVE 421 Construction Management 3 cr.
A course that seeks to impart in students a sound understanding of the construction company and project organization, pre-construction activities, estimating and bidding, staffing for construction, macro-level planning and scheduling, and quality control.

CIVE 422 Construction Methods and Safety Management 3 cr.
A course that exposes students to the tools needed for estimating, planning and directing operations in building construction and heavy civil projects. The course addresses equipment, methods, productivity, ownership and operating costs, and safety management. Prerequisites: CIVE 370 and CIVE 421.

CIVE 423 Construction Planning and Scheduling 3 cr.
A course on CPM, precedence network, schedule control, codes, collaborative planning, resource management, priority rules and leveling, earned value, schedule reduction, PERT, line of balance scheduling, the Last Planner System, Primavera P6, Microsoft Project and VICO control. Prerequisite: CIVE 421.

CIVE 520 Construction Contract Administration 3 cr.
The course deals with contract documents, with focus on specifications structure, procedural requirements, specifying methods and the basis for unit rate estimation. It covers the engineer's roles along with contract administration issues. Prerequisite: CIVE 421.

CIVE 522 Building Construction and Estimating 3 cr.
A course that exposes students to different building systems (concrete, masonry, steel, waterproofing, mechanical, electrical, etc.) and how to price them by choosing the best

materials and methods. The use of drawings and specifications will also be covered. Prerequisites: CIVE 400 (site work) and CIVE 421.

CIVE 524 Logistics, Technologies, and Productivity Concepts 3 cr.
The course covers construction site layout, team organization, information flow and complexities. Focus is on productivity improvement approaches, data gathering for analysis of construction operations, and issues related to process innovation and automation.

CIVE 525 Design of Temporary Support Structures 3 cr.
A course that covers design and construction of temporary support structures used in the construction industry, including concrete formwork, scaffolding, caissons, cofferdams and dewatering systems.

CIVE 620 Pre-Project Planning and Feasibility Analysis 3 cr.
A course covering the studies needed to make a go-ahead decision, including assimilation of client needs, surveys of project area and infrastructure conditions, scope validation, team development, project planning and cost estimation, and financial feasibility. Prerequisite: CIVE 421 or equivalent.

CIVE 621 Design Management for Large Projects 3 cr.
The course covers the characteristics of the design phase, design team selection, and design services agreement formation and negotiation. It focuses on value engineering and management, constructability considerations and project cost management during design.

CIVE 622 Advanced Topics in Construction Management (Blended) 3 cr.
A course focusing on the construction phase of a project's lifecycle. Topics include: site organization structure, construction safety, labor management, materials procurement systems, site information management, scheduling, project controls and sustainability. Prerequisite: CIVE 421 or equivalent.

CIVE 623 Construction Project Management 3 cr.
The course offers an extended overview of project management. It covers integrated planning-estimating-scheduling concept; project time, budget and quality baselines; materials management and subcontracting issues; and integrated project cost-time control. Prerequisite: CIVE 421 or equivalent.

CIVE 624 Building Information Modeling 3 cr.
A course that covers Building Information Model (BIM) use and benefits in design and construction. It addresses collaborative design, clash detection, level of development (LOD), BIM contracts, automated code checking, simulation, BIM and lean applications, and integrated project delivery.

CIVE 625 IT Applications in Construction 3 cr.
A course that covers computing tools impacting the construction industry such as mobile sensing, instrumentation and information systems to support field engineering tasks and computerized systems applications to perform specific functions, such as estimating, scheduling and cost control.

CIVE 626 Lean Construction Methods and Applications (Blended) 3 cr.
A course on lean theory, production control, value stream mapping, process improvement, project definition, lean design, integrated project delivery, advanced lean scheduling, risk assessment, budget under uncertainty and project monitoring. Prerequisite: CIVE 421.

CIVE 627 Construction Systems Analysis and Simulation 3 cr.
A course that covers planning and simulation modeling of construction operations, design of efficient processes, construction productivity and resource use considerations, production system design, construction supply chain management and analysis of construction systems.

CIVE 628 Sustainable Building Design and Construction 3 cr.
A course that covers principles of sustainable design and construction, including lifecycle assessment, economic and environmental impacts, carbon footprint, and green building rating systems such as LEED and BREEAM.

CIVE 629 Construction Business Management 3 cr.
A course that covers the principles of business management of construction companies and projects including financial management, accounting, costs and profits management, cash flows management, evaluation of sources of construction funding and financial decisions analysis. Prerequisite: CIVE 370.

CIVE 720 Construction Technology for Tall Buildings 3 cr.
A course on the latest construction practices and processes for tall buildings from foundation to roof. It covers advanced methods, materials, equipment and systems used for the construction of tall buildings, as well as principles of sustainable construction. Prerequisite: CIVE 422.

CIVE 721 Advanced Scheduling Analysis 3 cr.
A course that provides advanced techniques in construction scheduling. It examines monitoring, updating and controlling the project schedule. It introduces the methods used in performing forensic scheduling analysis. Prerequisite: CIVE 423.

CIVE 722 Project Deliverance and Contracts 3 cr.
The course offers an overview of project delivery organizations, risk considerations and contracts. It covers the elements of construction contracts, with emphasis on contract formation, substantial completion and close-out processes. Prerequisite: CIVE 421 or equivalent.

CIVE 723 Dispute Resolution on Projects 3 cr.
The course covers construction contract conditions governing claims and disputes. Focus is on claim evolvement and administration (including issues dealing with time barring, notification and substantiation), ADR methods and amicable settlement. Prerequisite: CIVE 421.

CIVE 724 Mediation of Engineering Disputes 3 cr.
This course focuses on the use of mediation for resolving construction related disputes. Topics include: dispute avoidance in construction, alternative dispute resolution techniques, and the mechanics of mediation and negotiation. Prerequisite: CIVE 520.

CIVE 725 Construction Decisions Under Uncertainty 3 cr.
A course that covers construction project and organization decisions for the uncertain future. The course addresses decision theory, competitive bid analysis, probabilistic modeling and simulation, and multiple regression analysis in managing construction. Prerequisite: STAT 230.

Geotechnical Sequence

CIVE 330 Engineering Geology 3 cr.
A course that discusses the composition and properties of rocks; geologic processes; geologic hazards; geologic structure and engineering consequences; terrain analysis and geologic mapping; interpretation and use of geologic maps; application of geology to engineering practice.

CIVE 430 Soil Mechanics and Laboratory 3 cr.
A course on soil classification and index properties; soil structure and moisture; compaction; seepage; effective stress concept; compressibility and consolidation; stress and settlement analysis; shear strength; and laboratory experiments. Prerequisites: CIVE 310 and CIVE 330.

CIVE 431 Foundation Engineering 3 cr.
A course that covers site investigations; evaluation of data from field and laboratory tests; estimation of stresses in soil masses; applications of principles of soil mechanics to determination of bearing capacity and settlement of spread footings, mats, single piles and pile groups. Prerequisite: CIVE 430.

CIVE 631 Applied Foundation Engineering 3 cr.
A course on braced excavations, retaining structures, deep foundations, slope stability and computer applications. Prerequisite: CIVE 431.

CIVE 632 Soil Behavior 3 cr.
A course on soil mineralogy, soil formation and composition; influence of geological factors on properties; colloidal phenomena in soils; soil structure; analysis of conduction phenomena (hydraulic, diffusive, thermal and electrical); compressibility, strength and deformation properties. Prerequisite: CIVE 430.

CIVE 633 Soil and Site Improvement 3 cr.
A course that covers compaction, admixture stabilization, foundation soil treatment, reinforced soil and composite materials, and material sites reclamation. Prerequisite: CIVE 430.

CIVE 634 Shear Strength of Soils 3 cr.
A course that covers stresses within a soil mass, tests to measure stress strain properties, stress-strain relationships, shear strength, drained and undrained conditions, constitutive models, and failure criteria applications. Prerequisite: CIVE 430.

CIVE 635 Earth Dams 3 cr.
A course that examines hydraulic dams, rolled earth dams, homogenous dams, thin core dams, filters, causes of dam failures, seepage control and seismic stability of dams. Prerequisite: CIVE 430.

CIVE 636 Geotechnical Earthquake Engineering 3 cr.
A course on causative mechanisms and characteristics of earthquakes; evaluation dynamic soil properties local site response; seismic soil-structure interaction; evaluation and mitigation of soil liquefaction; seismic code provisions and additional current topics. Prerequisite: CIVE 430.

Water Resources Sequence

CIVE 340 Fluid Mechanics and Laboratory 3 cr.
A course that deals with fluid properties, fluid static, continuity equation, Bernoulli's equation, energy principle, momentum principle and laboratory experiments. Prerequisites: CIVE 210, MATH 201 and PHYS 210.

CIVE 440 Hydraulics and Laboratory 3 cr.
A course that covers flow in conduits, flow in open channels, flow measurements, design of basic hydraulic structures and laboratory experiments. Prerequisites: CIVE 340, MATH 202, MATH 251 and ENGL 206.

CIVE 541 Engineering Hydrology 3 cr.
A course outlining hydrologic principles, rainfall-runoff analysis, flood routing, frequency analysis and ground water hydrology. Prerequisites: CIVE 340 and MATH 202.

CIVE 542 Urban Hydrology 3 cr.
A course covering design rainfall, infiltration, overland flow, channel flow, storm sewer hydraulics, stormwater detention and simulation models. Prerequisite: CIVE 440.

CIVE 640 Advanced Hydraulics 3 cr.
A course that covers closed conduit flow, water distribution systems, transient analysis, open channel flow, flood control, culvert hydraulics and design of various hydraulic structures. Prerequisite: CIVE 440.

CIVE 641 Surface Water Hydrology 3 cr.
A course on design storm, rainfall-runoff modeling, flood routing, reservoir routing, simulation models and stochastic hydrology. Prerequisite: CIVE 541 or equivalent.

CIVE 642 Groundwater Hydrology 3 cr.
A course that deals with properties of groundwater, Darcy's law, steady groundwater flow, unsteady groundwater flow, well hydraulics, unsaturated flow, sea-water intrusion and numerical modeling. Prerequisite: CIVE 541.

CIVE 644 Coastal Engineering 3 cr.
A course on small-amplitude wave theory (linear theory); finite-amplitude wave theory (nonlinear theory); conoidal wave theory; solitary wave theory; wave refraction, diffraction and reflection; wave forces and interaction with man-made structures; and design of maritime structures e.g. breakwaters. Prerequisite: CIVE 440.

CIVE 645 Surface Water Quality Modeling and Management 3 cr.
An introductory course on surface water quality pollution problems in streams, rivers, lakes, reservoirs and estuaries with a focus on both the quantitative modeling aspects of surface water quality as well as the management and policy aspects of it. Both mechanistic and empirical models for assessing the status of surface water bodies are introduced.

CIVE 647 Water Resource Systems: Planning and Management 3 cr.
A course that introduces principles demonstrating steps in engineering policy planning as it applies to water resources management. Emphasis will be placed on systems and socioeconomics analysis, conflict management and concepts in strategic assessment.

CIVE 648 Climate Change and Water Resources 3 cr.
An introductory course on global climate change and its potential impacts on water

resources and related sectors. It explores drivers of climate change, greenhouse gases emissions and mitigation efforts, and adaptation options with emphasis on Integrated Water Resources Management.

CIVE 740 Transport Phenomena in Surface and Subsurface Waters 3 cr.
A course on advection, diffusion and dispersion of pollutants; transport in rivers and estuaries; transport in groundwater; numerical modeling; design of wastewater discharge system.

Environmental Sequence

CIVE 251 Environmental Chemistry 3 cr.
A course that introduces the basic principles of environmental chemistry and discusses example applications from the natural and engineered worlds.

CIVE 251L Introductory Chemical Analysis Laboratory 2 cr.
A laboratory course on chemical qualitative and quantitative analysis of environmental samples. The course introduces fundamental chemical analytical and physicochemical principles in environmental chemistry. Pre- or corequisite: CIVE 251.

CIVE 252 Environmental Microbiology 3 cr.
A course that introduces basic principles of environmental microbiology. It discusses example applications from the natural and engineered worlds. The main goals of this course are to present an overview of important microorganisms involved in environmental systems; their ecology, interactions with various pollutants, and beneficial or harmful effects on humans.

CIVE 451 Contemporary Environmental Issues 3 cr.
Introduction to environmental quality and the technical background necessary for understanding environmental issues, controlling environmental degradation, and preserving air and water quality. Material balance concepts for tracking substances in the environmental systems.

CIVE 550 Water Treatment and Laboratory 3 cr.
A course that examines the quality and principles of municipal and industrial water treatment processes and methods of testing for physical, chemical and biological parameters. Prerequisite: CIVE 251 and CIVE 251L or CHEM 202 and CHEM 203 or equivalent, or consent of instructor.

CIVE 551 Wastewater Treatment and Laboratory 3 cr.
A course that examines the quality and principles of municipal wastewater treatment processes and methods of testing for physical, chemical and biological parameters. Prerequisite: CIVE 252 or BIOL 209, or BIOL 210 or equivalent, or consent of instructor.

CIVE 552 Waste Management and Treatment 3 cr.
A course on engineering principles, practices and techniques for the management of solid wastes: sources, composition, properties, impacts, generation, storage, collection and transport, processing, resource recovery and disposal.

CIVE 553 Environmental Biotechnology 3 cr.
A course that examines current and emerging environmental biotechnologies used for environmental quality evaluation, monitoring and remediation of contaminated environments; and provides students with working knowledge of the science that

underpins them. Prerequisite: CIVE 252 or BIOL 209, or BIOL 210 or equivalent, or consent of instructor.

CIVE 555 Air Quality Management 3 cr.
A course on the principles, practices and techniques for the management of air pollution: types, sources, properties, impacts, standards, control technologies, atmospheric dispersion, emissions and indoor air quality.

CIVE 650 Water and Sewage Works Design 3 cr.
A course that examines the design of water and wastewater schemes, including design reports and a literature search on the development of conventional treatment processes. Prerequisite: CIVE 550 or CIVE 551, or consent of instructor.

CIVE 651 Processes in Water and Wastewater Treatment 3 cr.
A course on sedimentation, filterability, permeability and fluidization, ion exchange, aeration, flotation, membrane filtration and aerobic digestion. Experimental applications of processes. Prerequisites: CIVE 251 and CIVE 252, or equivalent; or consent of instructor.

CIVE 652 Landfill Engineering Design 3 cr.
A course on solid waste disposal with emphasis on design development of landfill elements (site selection and characterization, gas extraction and management, leachate collection and management, liners, covers, closure and post-closure monitoring. Prerequisite: CIVE 552 or consent of instructor.

CIVE 653 Environmental Chemistry and Microbiology 3 cr.
A course that deals with organic, inorganic and physical chemistry; chemical equilibrium; reaction kinetics; acidity, alkalinity; composition, morphology and classification of microorganisms; energy, metabolism and synthesis; growth, decay and kinetics; and biological water quality indicators. Prerequisites: CIVE 251 and CIVE 252, or equivalent; or consent of instructor.

CIVE 654 Environmental Bioremediation 3 cr.
A course that discusses the application of biological treatment for the remediation of contaminated environments and highlights current engineering methods/design used to enhance biodegradation. Prerequisites: CIVE 251 and CIVE 252, or equivalent; or consent of instructor.

CIVE 655 Air Pollution and Control 3 cr.
A course that examines processes and design equipment for the control of particulates and gaseous emissions. Prerequisite: consent of instructor.

CIVE 656 Environmental Impact Assessment 3 cr.
A course on procedures of assessing/preparing/reviewing/presenting environmental impacts of developmental projects/facilities: industrial facilities, waste management/disposal, wastewater treatment, transportation, dams and reservoirs, irrigation/drainage schemes, coastal zone developments, natural resource management, etc. Prerequisite: Fourth year status or consent of instructor.

CIVE 657 Methods of Environmental Sampling and Analysis 3 cr.
A course on sampling techniques and instrumental methods in environmental sciences; determination of pollutants in water, air and soil; analytical techniques; adaptation of procedures to specific matrices; case studies. Prerequisites: CIVE 251 and CIVE 252, or equivalent; or consent of instructor.

CIVE 658 Industrial Waste Management 3 cr.
A course on engineering principles, practices and techniques for the management of industrial-hazardous wastes: sources, generation, properties. Impacts and auditing of industrial facilities. Basic treatment processes and disposal methods. Site remediation. Prerequisite: Fourth year status or consent of instructor.

CIVE 659 Environmental and Water Conflict Management 3 cr.
A course on the development of case studies in environmental and water conflict management taught under a framework of role-play of opponent's perspective and the decision-making thereof.

CIVE 751 Wastewater Reclamation and Reuse 3 cr.
A course that examines environmental issues in water reuse, risk assessment, water reclamation technologies, storage of reclaimed water, usage of reclaimed water, and planning of wastewater reclamation and reuse. Prerequisite: CIVE 551.

CIVE 755 Air Pollution Modeling 3 cr.
A course that deals with mathematical models, air pollution meteorology, plume rise, dispersion and atmospheric chemistry, meteorological models, as well as Gaussian, statistical and other special application models. Prerequisite: CIVE 555 or consent of instructor.

Transportation Sequence

CIVE 460 Transportation Engineering and Laboratory 3 cr.
An introductory course to the field of transportation engineering through presenting the basics of traffic engineering, traffic flow theory and airport planning. The laboratory component consists of field experiments that reinforce students' understanding of academic concepts and principles. Prerequisites: STAT 230 and ENGL 206.

CIVE 461 Highway Engineering 3 cr.
A course that examines road vehicle performance; principles of geometric design and highways; horizontal and vertical alignment; earthwork; intersections and interchanges; pavement design; parking facilities; and highway planning (travel demand forecasting). Prerequisites: CIVE 201 and CIVE 301.

CIVE 661 Urban Transportation Planning I 3 cr.
An introductory course on methods and models used in transportation planning with emphasis on the urban context. Topics include travel patterns in urban areas; data requirements for planning and data collection techniques; transportation/land-use interaction; travel demand and network models; transport supply options; and evaluation techniques. Prerequisite: CIVE 461.

CIVE 662 Traffic Engineering 3 cr.
A course outlining traffic engineering studies; traffic control of signalized and unsignalized intersections; signal control hardware and maintenance; arterial performance and operations; and network optimization. Prerequisite: CIVE 460.

CIVE 663 Transportation Systems Analysis 3 cr.
A course that introduces methods, models and applications of transportation systems analysis focusing on both supply/performance and demand/economics. Prerequisite: CIVE 460.

CIVE 664 Design and Management of Transport Operations 3 cr.
A course on probabilistic and optimization methods for designing efficient operations in freight carrier, airline, transit and traffic modes. Topics include crew and vehicle scheduling in freight, airline, transit modes; vehicle routing and facility location problems in carrier systems; runway and air traffic operations; and reliability in transit services. Prerequisites: CIVE 460 and STAT 230, or equivalent.

CIVE 665 Transportation Economics 3 cr.
A course that investigates the application of economic principles to the evaluation of projects and policies in the transport sector such as transport project benefits, costs and financing, and pricing in the transport sector. Prerequisite: CIVE 461.

CIVE 666 Public Transportation 3 cr.
A course on public transportation modes and services; single route, network and strategic planning; tasks involved in system operations; management of public transportation organizations; and privatization issues. Prerequisite: CIVE 460 or CIVE 461.

CIVE 761 Urban Transportation Planning II 3 cr.
A course examining advanced topics in urban transportation planning, transportation systems management techniques, travel demand analysis and discrete choice modeling of travel demand. Prerequisite: CIVE 661.

CIVE 762 Traffic Flow Theory 3 cr.
A course on characteristics of traffic flow, density and speed; models describing traffic flow; hydrodynamic analogue; and computer simulation models. Prerequisite: CIVE 460.

Materials Sequence

CIVE 370 Construction Materials and Technologies 3 cr.
An introductory course on the composition and properties of engineering materials such as asphalt, cement, concrete, geological materials, steel, polymers and wood. Hands-on laboratory experiments and demonstrations are part of the course and are designed to familiarize students with materials, testing methods, equipment and standards. Corequisite: CIVE 310.

CIVE 670 Concrete Technology 3 cr.
A course that examines Portland cements; aggregates; pozzolans; proportioning normal concrete mixtures; pumping concrete; consolidating, finishing and curing concrete; durability; testing hardened concrete; high-strength concrete; light and heavy weight concretes; and hot and cold weather concreting.

CIVE 671 Pavement Engineering 3 cr.
A course that examines highway and airport pavement design; flexible and rigid pavement types and wheel loads; stresses in flexible and rigid pavements; pavement behavior under moving loads; soil stabilization. The course covers empirical, mechanistic-empirical and mechanistic design methodologies. Prerequisite: CIVE 461.

CIVE 672 Highway Materials and Construction 3 cr.
A course that covers various materials constituents in highway pavement structures with emphasis on asphalt concrete, aggregate-soil mixtures, geotextiles and bituminous liquids. Materials properties, design, quality control and methods of construction will be described. Prerequisite: STAT 230.

CIVE 770 Viscoelastic Behavior of Construction Materials 3 cr.
A course that introduces students to viscoelastic behavior of construction materials, particularly asphalt concrete and polymer composites. The course covers basic concepts in material characterization, rheology, time-temperature superposition principles, in addition to linear and nonlinear viscoelastic models. Prerequisite: Graduate standing.

CIVE 771 Pavement Management Systems 3 cr.
A course that covers the principles of pavement management including types of pavement systems, common distresses and their assessment, pavement evaluation and rating systems, in addition to performance prediction and lifecycle analysis. Various field assessment methods in addition to non-destructive and accelerated tests will be discussed and demonstrated. Maintenance and rehabilitation techniques will be compared with emphasis on selection of the most efficient, environment-friendly and cost-effective approaches. Students will utilize computer applications using GIS, regional and international inventory data, and relevant software packages. Pre- or corequisite: CIVE 671 or CIVE 672.

Multidisciplinary Graduate and Senior Elective Courses.

CIVE 601 GIS and Geospatial Data Modeling 3 cr.
A course that examines the concepts and principles of Geographic Information System (GIS). It provides coverage of state-of-the-art GIS methods and tools: spatial and terrain analysis, geostatistical analysis, time series analysis and development of GIS integrated models.

CIVE 602 Experimental Design and Statistical Analysis for Engineers 3 cr.
A course that covers the main steps required to efficiently plan, conduct, analyze and interpret the results from experimental and observational studies. The course focuses on statistical inference and modeling. Topics covered include ANOVA, t-tests, regression models and non-parametric tests. The course involves working within a statistical modeling environment.

CIVE 603 Numerical Modeling 3cr.
A course that deals with ordinary differential equations: initial-, boundary- and characteristic-value problems; partial differential equations: steady state, time dependent and oscillatory problems; techniques: Runge-Kutta, shooting, iterative and finite difference methods. Prerequisite: MATH 251.

CIVE 681 Evaluation of Cost Alternatives 3 cr.
A course that covers the principles of economic evaluations using concepts of time value of money to compare alternatives related to construction, design and real property development.

CIVE 682 Infrastructure Systems Management 3 cr.
A course on modeling and optimization methods and their application to inspection, performance prediction and maintenance decision-making for the management of infrastructure systems.

CIVE 683 Reliability Based Design of Civil Systems 3 cr.
A course that covers applications of reliability theory in assessing the safety and reliability of civil systems in the presence of uncertainty; decision-making and risk analysis; definition of the probability of failure; modeling uncertainty in resistance and load; load and resistance factor design (LRFD) in structural and geotechnical engineering; basics of design code calibration.

CIVE 684 Environmental Geotechnics 3 cr.
A course on geotechnical practice in environmental protection and restoration; influence of physical and chemical processes in soils on the evaluation of contaminant distribution; design of waste containment systems, slurry walls and soil stabilization; the applicability and use of geosynthetics; and technologies for site restoration and cleanup. Prerequisite: CIVE 430.

CIVE 685 Environmentally Sustainable Renewable Energy Sources 3 cr.
A course that covers basic principles, potentials and limitations of various renewable energy sources and technologies, including solar energy, hydroelectricity, wind energy, bio-energy, fuel cells, batteries and supercapacitors. Sustainability and impact of renewable energy sources on the environment will be discussed. Prerequisite: CIVE 251 or CHEM 202.

CIVE 686 Sustainable Built Environments 3 cr.
A course that enhances knowledge about the past, present and future conditions of the built environment. The course starts with a general overview of global / regional environmental, social and economic issues. Then, focusing on the built environment, students are introduced to climate responsive and environmentally friendly concepts in planning and design. The impact of using construction materials and their environmental impact throughout the building's lifecycle will also be discussed. Students will gain critical knowledge through interactive lectures, case study analysis and the proposal of concepts relating to a particular theme. Upon completing the course, students will be equipped with the necessary knowledge that will enable them to make informed project related design decisions in their careers. CIVE 688 Engineering Sustainability 3 cr.

Sustainability is the grand challenge of our time especially with the UN SDG (Sustainable Development Goals) 2030 Agenda. This course addresses the basics of sustainability and its practical application in engineering to confront the main challenges of our planet, including climate change, resource depletion, social justice, environmental and health protection. The goal of the course is to introduce students to systems thinking and sustainable design principles with a focus on the effect of human activities and engineering projects on natural systems and societies. The course teaches students to use the four pillars of sustainability (human, economic, social, environmental) as a holistic approach for engineering practices. It also provides the necessary scientific tools for sustainability assessment of products and systems. Students will be also introduced to the current challenges, active debates, and unresolved research questions in sustainability.

Special Courses

CIVE 600 Seminar in Civil and Environmental Engineering 0cr.
A seminar that consists of current research or applied civil and environmental engineering projects presented by faculty members, graduate students, or invited speakers.

CIVE 690 Special Projects 3 cr.
Special Projects

CIVE 691 Special Topics in Civil and Environmental Engineering 3 cr.
Special Topics in Civil and Environmental Engineering

CIVE 692 Advanced Topics in Civil and Environmental Engineering 3 cr.
Advanced Topics in Civil and Environmental Engineering

CIVE 799 ME Thesis 6 cr.
ME/MS Thesis

CIVE 980 Qualifying Exam I: Comprehensive Exam 0 cr.
Qualifying Exam I: Comprehensive Exam

CIVE 981 Qualifying Exam II: Thesis Proposal Defense 0 cr.
Qualifying Exam II: Thesis Proposal Defense

CIVE 982 PhD Thesis 3 cr.
PhD Thesis

CIVE 983 PhD Thesis 6 cr.
PhD Thesis

CIVE 984 PhD Thesis 9 cr.
PhD Thesis

CIVE 985 PhD Thesis 12 cr.
PhD Thesis

CIVE 986 PhD Thesis 0 cr.
PhD Thesis

CIVE 987 PhD Thesis Defense 0 cr.
PhD Thesis Defense

Department of Electrical and Computer Engineering

Chairperson:	Chehab, Ali
Professors:	Abou-Faycal, Ibrahim; Bazzi, Louay; Chaaban, Farid; Chedid, Riad; Chehab, Ali; Dawy, Zaher; Elhajj, Imad; El-Hajj, Ali; Jabr, Rabih; Kabalan, Karim; Karaki, Sami; Kayssi, Ayman; Sharafeddine, Sanaa
Associate Professors:	Awad, Mariette; Costantine, Joseph; Daher, Naseem; Kanj, Rouwaida; Karameh, Fadi; Saghir, Mazen; Tawk, Youssef; Zaraket, Fadi
Assistant Professors:	Fahs, Jihad; Issa, Ibrahim; Sarieddine, Hadi
Adjunct Professors:	Hajj, Hazem; Mansour, Mohammad; Mneimneh, Saad
Lecturers:	Bakri, Hussein; Hariss, Khalil; Hussein, Ali; Shwaykani, Hassan
Instructors:	Ashkar, Nicolas; Chbaro, Malek

The Department of Electrical and Computer Engineering offers three undergraduate programs leading to the degree of Bachelor of Engineering in addition to two minors and two tracks.

Undergraduate Programs

The Department of Electrical and Computer Engineering offers the degree of Bachelor of Engineering in three majors:

- Computer and Communications Engineering (CCE)
- Computer Science and Engineering (CSE)
- Electrical and Computer Engineering (ECE)

Mission

We promote excellence in undergraduate and graduate education, research, and service to the profession at the regional and global levels. We offer world-class academic programs built upon a solid foundation of engineering, science, and liberal education. We prepare students to be professionals, capable of being leaders, entrepreneurs, and researchers, who deploy their skills with ingenuity, integrity, and responsibility.

The Computer and Communications Engineering program allows students to focus on the areas of communication systems, networks, or software systems. The Computer Science and Engineering program allows students to focus on the areas of software engineering, systems and networks, cybersecurity, theory and algorithms, data science, or bioinformatics. The CSE program is offered in cooperation with the Computer Science Department of the

Faculty of Arts and Sciences. The Electrical and Computer Engineering program allows students to focus on the areas of power and energy systems, electromagnetics and radio frequency systems, or control and intelligent systems. The ECE and CCE programs also allow students to focus on electronics or computer systems.

All three programs require the completion of 143 credits including an internship and a final year project; and prepare students for professional careers as well as graduate studies.

The ECE department also offers a minor in Biomedical Engineering and a track in Control and Robotics, in addition to a minor and a track in Artificial Intelligence.

Computer and Communications Engineering Program

Program Educational Objectives

The objectives of the CCE program are to graduate students who are able to:

- Achieve their employment or post-graduate educational goals and
- Advance in their careers through leadership, life-long learning, innovation, critical thinking, integrity and civic responsibility.

Program Requirements

- **Mathematics:** MATH 201; MATH 202; MATH 211 or CMPS 211; MATH 218 or 219; STAT 230/233; and one of MATH 210, 224, 227, MATH/CMPS 251 or 261
- **Sciences:** PHYS 210, PHYS 210L, CHEM 201 or 202, CHEM 203 or 205, and one additional science elective
- **General Education Requirements:**
  - 6 credits in Cultures and Histories
  - 3 credits in History of Ideas
  - 6 credits in Societies and Individuals
  - 6 credits in understanding communications (ENGL 203 and ENGL 206)
  - 3 credits in understanding communications (Arabic)

- 3 credits Community Engaged Learning (one course should cover the theme of Social Inequalities)

- **Human Values:** INDE 410
- **INDE 301:** Engineering Economy
- **ECE Core Courses:** FEAA 200, EECE 210, EECE 230, EECE 290, EECE 310, EECE 311, EECE 320, EECE 321, EECE 330, EECE 340, EECE 350, EECE 380, EECE 442
- **ECE Laboratories:** EECE 310L, EECE 321L, EECE 410L, two additional laboratories: one restricted laboratory and one elective laboratory
- **ECE Restricted Electives:** Four restricted elective courses from the list of CCE Focus Area courses with a minimum of two courses from one area and no more than three courses from any given area.
- **Undergraduate Elective Courses:** 3 credits of EECE 300 or 400 level courses
- **EECE Electives:** 6 credits of EECE with a number equal to, or greater than, 300 (except EECE 312)
- **Pre-Approved Electives:** 9 credits of coursework. No more than 6 credits may be taken from the same department, program or track (except EECE)
- **Approved Experience:** EECE 500
- **Final Year Project:** EECE 501 and EECE 502

The program requirements can be completed according to the following proposed schedule:

Term I (Fall)		**Credits**
FEAA 200	Introduction to Engineering and Architecture	3
EECE 210	Electric Circuits	3
ENGL 203	Academic English	3
MATH 201	Calculus and Analytic Geometry III	3
MATH/CMPS 211	Discrete Structures	3
		Total 15
Term II (Spring)		**Credits**
EECE 230	Introduction to Computation and Programming	3
EECE 290	Analog Signal Processing	3

MATH 202	Differential Equations	3
MATH 218/219	Linear Algebra	3
PHYS 210	Introductory Physics II	3
PHYS 210L	Introductory Physics Laboratory II	1
		Total 16
Term III (Summer)		**Credits**
CHEM 201/202	Chemistry Course	3
CHEM 203/205	Chemistry Laboratory	2
Humanities or Social Sciences Elective 3		3
		Total 8
Term IV (Fall)		**Credits**
EECE 310	Electronics	3
EECE 310L	Electric Circuits Laboratory	1
EECE 320	Digital Systems Design	3
EECE 330	Data Structures and Algorithms	3
EECE 380	Engineering Electromagnetics	3
STAT 230/233	Introduction to Probability and Random Variables	3
		Total 16
Term V (Spring)		**Credits**
EECE 311	Electronic Circuits	3
EECE 321	Computer Organization	3
EECE 321L	Computer Organization Laboratory	1
EECE 340	Signals and Systems	3
EECE 350	Computer Networks	3
Science Elective		3
		Total 16
Term VI (Summer)		**Credits**
ENGL 206	Technical English	3
ARAB		3
Cultures and Histories or Societies and Individuals Elective		3
		Total 9

Term VII (Fall)		**Credits**
EECE 442	Communication Systems	3
EECE 3xx/4xx	Restricted Elective	3
EECE 3xx/4xx	Restricted Elective	3
MATH	Elective	3
INDE 301	Engineering Economy	3
		Total 15
Term VIII (Spring)		**Credits**
EECE 3xx/4xx	Restricted Elective	3
EECE 3xx/4xx	Restricted Elective	3
	Community Engaged Learning	3
EECE 410L	System Integration Laboratory	1
INDE 410	Human values	3
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Term IX (Summer)		**Credits**
EECE 500	Approved Experience	1 b
Term X (Fall)		**Credits**
EECE 501	Final Year Project	3
EECE	Restricted Laboratory	1
EECE 3xx/4xx	Elective	3
EECE	EECE Elective	3
Pre-Approved Electives	EECE or Other	3
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Term XI (Spring)		**Credits**
EECE 502	Final Year Project	3
EECE	Elective Laboratory	1
EECE	EECE Elective	3

Two Pre-Approved Electives	EECE or Other	6
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Total Credit Hours		**143**

List of CCE Focus Area Courses

Area 1: Applied Electromagnetics and RF Systems: EECE 480, 481, 482, 484, 485, 486, 487, 488

Area 2: Computer Hardware Systems: EECE 412, 420, 421, 422, 423, 425

Area 3: Communications and Networking: EECE 440, 444, 446, 451, 455, 491

Area 4: Software Systems: EECE 331, 332, 334, 338, 430, 432, 433, 437, 438, 439, 490

List of CCE Restricted Labs

EECE 412L, 430L, 431L, 434L, 435L, 442L, 451L, 480L

List of Pre-Approved Electives

- Any EECE course with a number equal to or greater than 300 (except EECE 312)
- Any ENMG course with a number equal to, or greater than, 600
- ACCT 210, 215
- ARDS 400
- BIOL 201, 202, 210, 223, 224, 225, 243, 244, 247, 260, 268, 290, 370
- BMEN 501, 502, 600, 601, 603, 605, 606, 607, 608, 609, 610, 611, 798CC
- CHEM 200, 201, 202, 206, 208, 211, 212, 215, 217, 218, 227, 228, 229
- CHEN 490, 675
- CIVE 460, 461, 553, 601, 602, 655, 661, 662, 663, 664, 665

- CMPS 224, 251, 257/215, 262, 272/240, 274/232, 277/244, 281/254, 285, 286, 288, 297, 316, 350, 351, 373/323, 391, 396
- DCSN 200, 210, 216
- ECON 214, 215, 217, 218, 222, 223/224, 226, 227, 228, 230, 232, 235, 236, 237, 239, 240, 241, 242, 243, 333, 341
- ENTM 225, 235
- FEAA 520
- FINA 211, 220
- GEOL 201, 204, 205, 211, 212, 213, 219, 221
- INDE 302, 303, 412
- MATH 210, 212, 213, 214, 220, 223, 224, 227, 234, 238, 241, 242, 251, 261, 271, 281, 303, 304, 306, 314, 315, 341, 344, 351
- MECH 310, 314, 320, 340, 550, 631, 633, 634, 641, 642, 674
- MKTG 210, 225
- MNGT 218, 220, 229, 230
- PHYL 246
- PHYS 212, 217, 223, 225, 226, 235, 236, 249
- PSYC 226, 229
- Any STAT course with a number equal to or greater than 234
- VIPP 201, 202, 301, 401

List of Science Electives

- BIOL 201, BIOL 202, BIOL 209, BIOL 210, CHEM 201, CHEM 207/211, GEOL 201, GEOL 204, GEOL 205, GEOL 211, MAUD 204, PHYL 246, PHYS 212, PHYS 217, PHYS 223, PHYS 235, PHYS 236, PSYC 222, PSYC 224

Computer Science and Engineering Program

Program Educational Objectives

The objectives of the Computer Science and Engineering (CSE) program are to graduate students who are able to:

- Achieve their employment or post-graduate educational goals and
- Advance in their careers through leadership, life-long learning, innovation, critical thinking, integrity, and civic responsibility.

Program Requirements

- Mathematics: MATH 201, MATH 211, MATH 218 or 219, STAT 230 or 233, and two courses from the list of CSE MATH electives.
- Sciences: PHYS 211; PHYS 211L; and at least 8 credits from the list of science electives, to include at least one natural science elective.
- General Education Requirements:
  - 6 credits in Cultures and Histories
  - 3 credits in History of Ideas
  - 6 credits in Societies and Individuals
  - 6 credits in understanding communications (ENGL 203 and ENGL 206)
  - 3 credits in understanding communications (Arabic)
  - 3 credits Community Engaged Learning (one course should cover the theme of Social Inequalities)
- Human Values: INDE 410
- INDE 301: Engineering Economy
- INDE 412: Engineering Entrepreneurship
- CSE Core Courses: FEAA 200, EECE 230, 320, 321, 330, 331, 332, 334, 338, 351, 430, 432, 455, 490.

- CSE Laboratories: EECE 321L, 430L, 435L, and one restricted CSE laboratory.
- CSE Focus Areas: 9 credits to satisfy the requirements of one of the CSE focus areas.
- Pre-Approved Electives: Five 3-credit courses selected from the list of pre-approved Electives.
- Approved Experience: EECE 500
- Final Year Project: EECE 501 and EECE 502.

The program requirements can be completed according to the following proposed schedule

Term I (Fall)		**Credits**
FEAA 200	Introduction to Engineering and Architecture	3
EECE 230	Introduction to Computation and Programing	3
MATH/CMPS 211	Discrete Math	3
MATH 201	Calculus and Analytic Geometry III	3
ENGL 203	Academic English	3
		Total 15
Term II (Spring)		**Credits**
EECE 330	Data Structures and Algorithms	3
MATH 218/219	Linear Algebra	3
STAT 230/233	Probability and Random Variables	3
PHYS 211	Electricity and Magnetism	3
PHYS 211L	Electricity and Magnetism Lab	1
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Term III (Summer)		**Credits**
At least 4 credits from the List of CSE Science Electives		4
Cultures and Histories or Societies and Individuals Elective		3
		Total 7
Term IV (Fall)		**Credits**
EECE 331	Design and Analysis of Algorithms	3
EECE 332	Object-Oriented and Effective Java Programing	3

EECE 320	Digital Design	3
EECE 351	Computing Networks and Services	3
At least 4 credits from the List of CSE Science Electives		4
		Total 16
Term V (Spring)		**Credits**
EECE 338	Theory of Computation	3
EECE 334	Programming Language Design and Implementation	3
EECE 321	Computer Organization	3
EECE 321L	Computer Organization Lab	1
INDE 301	Engineering Economy	3
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Term VI (Summer)		**Credits**
Math Elective		3
ENGL 206	Technical English	3
Arabic Elective		3
		Total 9
Term VII (Fall)		**Credits**
EECE 455	Cryptography and Network Security	3
EECE 490	Machine Learning	3
EECE 432	Operating Systems	3
EECE	CSE Restricted Laboratory	1
EECE or Other	CSE Focus Area	3
INDE 410	Human Values	3
		Total 16
Term VIII (Spring)		**Credits**
Math Elective		3
EECE 430	Software Engineering	3
EECE 430L	Web, Mobile, and Application Development Lab	2
EECE or Other	Pre-Approved Elective	3
EECE or Other	CSE Focus Area	3

INDE 412	Engineering Entrepreneurship	3
		Total 17
Term IX (Summer)		**Credits**
EECE 500	Approved Experience	1b
Term X (Fall)		**Credits**
EECE 501	Final Year Project	3
EECE 435L	Software Tools Lab	1
	Community Engaged Learning	3
EECE or Other	Two Pre-Approved Electives	6
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Term XI (Spring)		**Credits**
EECE 502	Final Year Project	3
EECE or Other	CSE Focus Area	3
EECE or Other	Two Pre-Approved Electives	6
Cultures and Histories or Societies and Individuals Elective		3
		Total 15
Total Credit Hours		**143**

List of CSE Focus Areas

- **Software Engineering (3 courses, 9 credits):** CMPS 224, EECE 433/CMPS 244, EECE 437, EECE 438, EECE 631, EECE 636, EECE 638, EECE 652, EECE 499 in Software Design and Validation

- **Systems and Networks (3 courses, 9 credits):** CMPS 224, EECE 420, EECE 421, EECE 422, EECE 425, EECE 439, EECE 451, EECE 454, EECE 503E, EECE 503F, EECE 651, EECE 499 in Systems and Networks

- **Cybersecurity (3 courses, 9 credits):** EECE 503G, EECE 503J, EECE 635, EECE 641, EECE 655, EECE 657, EECE 798I, EECE 798J, EECE 499 in Cybersecurity

- **Theory and Algorithms (3 courses, 9 credits):** MATH 210, MATH 241 or MATH 261 and one from CMPS 316, EECE 631, EECE 635, EECE 636, EECE 641, EECE 642, EECE 731, EECE 499 in Theory and Algorithms. (Students interested in theory and algorithms are advised to choose MATH 219 from MATH 218/219 and STAT 233 from STAT 230/233.)

- **Artificial Intelligence and Data Science (3 courses, 9 credits):** CMPS 262, EECE 433/CMPS 244, EECE 631, EECE 633, EECE 634, EECE 636, EECE 639, EECE 663, EECE 668, EECE 693, EECE 699, STAT 234, STAT/MATH 238, STAT 239, EECE 499 in Artificial Intelligence and Data Science.

- **Bioinformatics:** BIOL 210 or BIOL 223 and BIOL 370 or CMPS 297/396 and one from: EECE 433/CMPS 244, EECE 631, EECE 633, EECE 634, EECE 636, EECE 639, EECE 663, EECE 668, EECE 693, EECE 699, CMPS 262, STAT 234, STAT/MATH 238, STAT 239, EECE 499 in Bioinformatics.

- **Individually designed (3 courses, 9 credits):** Three courses with a unifying theme proposed by the student and approved by the academic advisor and the ECE undergraduate committee. At least one of the courses needs to be in the ECE department.

List of CSE Restricted Laboratories:

- EECE 431L, EECE 434L, and EECE 451L

List of CSE MATH Electives:

- MATH 202, MATH 210, MATH 220, MATH 224, MATH 227, MATH 241, MATH 242, MATH 251 or CMPS 251, and MATH 261.

List of Pre-Approved Electives

- Any EECE course with a number equal to or greater than 300
- Any ENMG course with a number equal to, or greater than, 600
- ACCT 210, 215
- ARDS 400
- BIOL 201, 202, 210, 223, 224, 225, 243, 244, 247, 260, 268, 290, 370
- BMEN 501, 502, 600, 601, 603, 605, 606, 607, 608, 609, 610, 611, 798CC
- CHEM 200, 201, 202, 206, 208, 211, 212, 215, 217, 218, 227, 228, 229
- CHEN 490, 675
- CIVE 460, 461, 553, 601, 602, 655, 661, 662, 663, 664, 665

- CMPS 224, 251, 257/215, 262, 272/240, 274/232, 277/244, 281/254, 285, 286, 288, 297, 316, 350, 351, 373/323, 391, 396
- DCSN 200, 210, 216
- ECON 214, 215, 217, 218, 222, 223/224, 226, 227, 228, 230, 232, 235, 236, 237, 239, 240, 241, 242, 243, 333, 341
- ENTM 225, 235
- FEAA 520
- FINA 211, 220
- GEOL 201, 204 205, 211, 212, 213, 219, 221
- INDE 302, 303, 412
- MATH 210, 212, 213, 214, 220, 223, 224, 227, 234, 238, 241, 242, 251, 261, 271, 281, 303, 304, 306, 314, 315, 341, 344, 351
- MECH 310, 314, 320, 340, 550, 631, 633, 634, 641, 642, 674
- MKTG 210, 225
- MNGT 218, 220, 229, 230
- PHYL 246
- PHYS 212, 217, 223, 225, 226, 235, 236, 249
- PSYC 226, 229
- Any STAT course with a number equal to or greater than 234
- VIPP 201, 202, 301, 401

List of CSE Science Electives

- BIOL 201(1), BIOL 202, BIOL 209, BIOL 210, CHEM 201(1), CHEM 202(1), CHEM 203, CHEM 205(1), CHEM 207(1)/211, GEOL 201(1), GEOL 203, GEOL 204, GEOL 205(1), GEOL 211, MAUD 204, PHYL 246, PHYS 210(1), PHYS 210L, PHYS 212(1), PHYS 217, PHYS 223, PHYS 228, PHYS 228L, PHYS 235, PHYS 236, PSYC 222, PSYC 224.

(1) Natural Science Course

Electrical and Computer Engineering Program

Program Educational Objectives

The objectives of the Program Educational ECE program are to graduate students who are able to:

- Achieve their employment or post graduate educational goals and
- Advance in their careers through leadership, life-long learning, innovation, critical thinking, integrity and civic responsibility.

Program Requirements

- **Mathematics:** MATH 201; MATH 202; MATH 211 or CMPS 211; MATH 218 or 219; STAT 230/233; and one of MATH 210, 224, 227, MATH/CMPS 251, 261
- **Sciences:** PHYS 210, PHYS 210L, CHEM 201 or 202, CHEM 203 or 205, and one additional science elective
- **General Education Requirements:**
  - 6 credits in Cultures and Histories
  - 3 credits in History of Ideas
  - 6 credits in Societies and Individuals
  - 6 credits in understanding communications (ENGL 203 and ENGL 206)
  - 3 credits in understanding communications (Arabic)
  - 3 credits Community Engaged Learning (one course should cover the theme of Social Inequalities)
- **Human Values:** INDE 410
- **INDE 301:** Engineering Economy
- **ECE Core Courses:** FEAA 200, EECE 210, 230, 290, 310, 311, 320, 321, 330, 340, 370, 380
- **ECE Laboratories:** EECE 310L, EECE 321L, EECE 410L, two additional laboratories: one restricted laboratory and one elective laboratory

- **ECE Restricted Electives:** Four restricted elective courses from the list of ECE Focus Area courses with a minimum of two courses from one area and no more than three courses from any given area.
- **Undergraduate Elective Courses:** 6 credits of EECE 300 or 400 level courses
- **EECE Electives:** 6 credits of EECE with a number equal to, or greater than, 300 (except EECE 312)
- **Pre- Approved Electives:** 9 credits of coursework. No more than 6 credits may be taken from the same department, program or track (except EECE)
- **Approved Experience:** EECE 500
- **Final Year Project:** EECE 501 and EECE 502

The program requirements can be completed according to the following proposed schedule:

Term I (Fall)		**Credits**
FEAA 200	Introduction to Engineering and Architecture	3
EECE 210	Electric Circuits	3
ENGL 203	Academic English	3
MATH 201	Calculus and Analytic Geometry III	3
PHYS 210L	Introductory Physics Laboratory II	1
PHYS 210	Introductory Physics II	3
		Total 16
Term II (Spring)		**Credits**
EECE 230	Introduction to Computation and Programming	3
EECE 290	Analog Signal Processing	3
MATH 202	Differential Equations	3
MATH 218/219	Linear Algebra	3
MATH/CMPS 211	Discrete Structures	3
		Total 15
Term III (Summer)		**Credits**
CHEM 201/202	Chemistry Course	3
CHEM 203/205	Chemistry Laboratory	2
Cultures and Histories or Societies and Individuals Elective		3
		Total 8
Term IV (Fall)		**Credits**

EECE 310	Electronics	3
EECE 310L	Electric Circuits Laboratory	1
EECE 320	Digital Systems Design	3
EECE 330	Data Structures and Algorithms	3
EECE 370	Electric Machines and Power Fundamentals	3
STAT 230/233	Introduction to Probability and Random Variables	3
		Total 16
Term V (Spring)		**Credits**
EECE 311	Electronic Circuits	3
EECE 321	Computer Organization	3
EECE 321L	Computer Organization Laboratory	1
EECE 340	Signals and Systems	3
EECE 380	Engineering Electromagnetics	3
Science Elective		3
		Total 16
Term VI (Summer)		**Credits**
ENGL 206	Technical English	3
ARAB	Arabic Course	3
Cultures and Histories or Societies and Individuals Elective		3
		Total 9
Term VII (Fall)		**Credits**
EECE 4xx	Restricted Elective	3
EECE 4xx	Restricted Elective	3
	Community Engaged Learning	3
MATH	Math Elective	3
INDE 301	Engineering Economy	3
		Total 15
Term VIII (Spring)		**Credits**
EECE 4xx	Restricted Elective	3
EECE 4xx	Restricted Elective	3
EECE 3xx/4xx	Elective	3
EECE 410L	System Integration Laboratory	1
INDE 410	Human Values	3
Cultures and Histories or Societies and Individuals Elective		3

		Total 16
Term IX (Summer)		**Credits**
EECE 500	Approved Experience	1 b
Term X (Fall)		**Credits**
EECE 501	Final Year Project	3
EECE 3xx/4xx	EECE Elective	3
EECE	Restricted Laboratory	1
EECE	EECE Elective	3
Pre-Approved Electives	EECE or Other	3
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Term XI (Spring)		**Credits**
EECE 502	Final Year Project	3
EECE	EECE Elective	3
EECE	Elective Laboratory	1
Two Pre-Approved Electives	EECE or Other	6
Cultures and Histories or Societies and Individuals Elective		3
		Total 16
Total Credit Hours		**143**

List of ECE Focus Area Courses

- Area 1: Electromagnetics and RF Systems: EECE 480, 481, 482, 484, 485, 486, 487, 488
- Area 2: Computer Hardware Systems: EECE 412, 420, 421, 422, 423, 425
- Area 3: Power and Energy Systems: EECE 471, 473, 474, 476
- Area 4: Control and Intelligence Systems: EECE 460, 461, 463

List of ECE Restricted Labs

EECE 412L, 460L, 462L, 470L, 471L, 473L, 480L

List of Pre-Approved Electives

- Any EECE course with a number equal to, or greater than, 300 (except EECE 312)
- Any ENMG course with a number equal to, or greater than, 600
- ACCT 210, 215
- ARDS 400
- BIOL 201, 202, 210, 223, 224, 225, 243, 244, 247, 260, 268, 290, 370
- BMEN 501, 502, 600, 601, 603, 605, 606, 607, 608, 609, 610, 611, 798CC
- CHEM 200, 201, 202, 206, 208, 211, 212, 215, 217, 218, 227, 228, 229
- CHEN 490, 675
- CIVE 460, 461, 553, 601, 602, 655, 661, 662, 663, 664, 665
- CMPS 224, 251, 257/215, 262, 272/240, 274/232, 277/244, 281/254, 285, 286, 288, 297, 316, 350, 351, 373/323, 391, 396
- DCSN 200, 210, 216
- ECON 214, 215, 217, 218, 222, 223/224, 226, 227, 228, 230, 232, 235, 236, 237, 239, 240, 241, 242, 243, 333, 341
- ENTM 225, 235
- FEAA 520
- FINA 211, 220
- GEOL 201, 204, 205, 211, 212, 213, 219, 221
- INDE 302, 303, 412
- MATH 210, 212, 213, 214, 220, 223, 224, 227, 234, 238, 241, 242, 251, 261, 271, 281, 303, 304, 306, 314, 315, 341, 344, 351
- MECH 310, 314, 320, 340, 550, 631, 633, 634, 641, 642, 674
- MKTG 210, 225

- MNGT 218, 220, 229, 230
- PHYL 246
- PHYS 212, 217, 223, 225, 226, 235, 236, 249
- PSYC 226, 229
- Any STAT course with a number equal to, or greater than, 234
- VIPP 201, 202, 301, 401

List of Science Electives

- BIOL 201, BIOL 202, BIOL 209, BIOL 210, CHEM 201, CHEM 207/211, GEOL 201, GEOL 204, GEOL 205, GEOL 211, MAUD 204, PHYL 246, PHYS 212, PHYS 217, PHYS 223,PHYS 235, PHYS 236, PSYC 222, PSYC 224

Track and Minor in Artificial Intelligence

The Track in Artificial Intelligence can be pursued by all ECMP/EECE students in the ECE department, and the Minor in Artificial Intelligence can be pursued by all AUB undergraduate students. Only students who have a cumulative GPA of 2.3 or more are eligible to apply for the minor.

Track Requirements (for ECMP/ EECE)

In order to satisfy the requirements of the track, a student must earn 18 credits of course work from the courses listed below.

- EECE 490 (required)
- EECE 693 (required)
- One of the following PSYC courses: 220, 222, 224, 226 or 229
- One elective from List A
- One elective from List A or List B
- One elective from either List A, B, or C

Elective courses:

- List A: EECE 463, 633, 639, 664, 668, 699, CMPS 276/262, STAT 239.
- List B: CMPS 351, EECE 634, EECE 641, EECE 669, EECE 692, ENMG 604, ENMG 616, MATH 234, MATH 351, MECH 691, STAT 234, STAT 235.
- List C: EECE 331, 334, 422, 423/623, 433, 491, 603, 636, 644, 660, 661, 665, 694, 696.

At least THREE courses must be EECE courses taken in the ECE Department. At least one course from List A or List B must be an EECE course. Required EECE courses cannot be replaced by equivalent courses taken outside the Department. Track open only for ECMP and EECE majors. Track cannot be claimed together with Minor in AI in the ECE Department or Minor in Data Science in the CMPS Department.

Minor Requirements (for all AUB students)

In order to satisfy the requirements of the minor, a student must earn 18 credits of course work from the courses listed below.

- EECE 230, EECE 231 or CMPS 200/201
- EECE 490 (required)
- One of the following STAT courses: 201, 210, 230, or 233
- One of the following PSYC courses: 220, 222, 224, 226 or 229
- One elective from List A
- One elective from List A or List B

Elective courses:

- **List A:** EECE 633, 639, 664, 668, 692, 693, 699, CMPS 276/262, MECH 642
- **List B:** CMPS 200/201, CMPS 212/202, EECE 330, 433, 634, 636, 641, 663, 694, 696, MATH 234, STAT 234.

At least TWO courses must be EECE courses taken in the ECE Department. At least one course from List A or List B must be an EECE course. Required EECE courses cannot be replaced by equivalent courses taken outside the Department. Minor cannot be claimed together with the Track in AI in the ECE Department or Minor in Data Science in the CMPS Department. No more than 9 credit hours taken in the major field of study may be used to

satisfy a requirement for another minor.

Track in Control and Robotics

The ECE Track in Control and Robotics provides a coherent academic framework between the ECE and ME departments in the areas of control, instrumentation and robotics. This track supports interested undergraduate ECE and ME students in pursuing additional control system modeling and design as given in either department based on their individual preferences. This track is open to all undergraduate ECE and ME students and will be indicated, upon its completion, on the transcript of participating students.

ECE students interested in taking the Control and Robotics track must satisfy the following course requirements.

- EECE 460 (3 cr.)
- EECE 461 (3 cr.)
- EECE 460L (1 cr.)
- One elective from list A (Control)
- One elective from list B (Robotics)
- One elective from either list A, B or C
- Total number of credits: 16

Elective Course

- **List A- Control:** EECE 660/MECH 653, EECE 662/MECH 655, EECE 663/MECH 656, EECE 665/MECH 654 and EECE 669/MECH648
- **List B- Robotics:** EECE 560/MECH 530, EECE 661/MECH 641, EECE 697/MECH 646 and EECE 698/MECH 650
- **List C- Others:** EECE 463/MECH 555, EECE 692/MECH642 and MECH 647

Course Descriptions

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic

responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It is interdisciplinary in nature bringing ideas and solutions from all disciplines in engineering and architecture. Annually.

EECE 210 Electric Circuits 3 cr.
A course on fundamentals of electric circuits; basic elements and laws; techniques of circuit analysis: node voltage, mesh current, Thevenin, Norton and source transformation; inductors, capacitors, mutual inductance and transformers; transient response of RC, RL and RLC circuits; steady state AC circuits; power calculations; circuit simulation using SPICE.

EECE 230 Introduction to Computation and Programming 3 cr.
This is an introductory programming course with an emphasis on abstractions and elementary algorithmic ideas. It uses the Python programming language. Topics include data types, selection, repetition, strings, lists, functions, files, sorting and searching algorithms, elementary asymptotic analysis, object-oriented programming, recursion, and divide and conquer algorithms. The course has a weekly lab.

EECE 231 Introduction to Computation and Programming with Applications 3 cr.
This is an introductory programming course that uses the Python programming language, with balanced emphasis on programming concepts, elementary algorithms, and applications. Topics include data types, selection, repetition, lists, tuples, strings, dictionaries, functions, recursion, sorting and searching algorithms, files, plotting and data visualization, introduction to object oriented programming, testing and debugging, elementary numerical analysis methods, symbolic computation, and introduction to Matlab. The course has weekly laboratory assignments. This course is not considered equivalent to EECE 230; hence, students who have taken this course and wish to transfer to ECE will need to take EECE 230.

EECE 290 Analog Signal Processing 3 cr.
A course on selected topics in circuit analysis; operational amplifiers; frequency responses; Butterworth and active filters; responses to periodic inputs; real, reactive and complex power; maximum power transfer; responses to step, impulse and switching operations; convolution; Laplace transform and its use in circuit analysis; Fourier transform; two-port circuits; and circuit simulation using SPICE. Prerequisite: EECE 210.

EECE 310 Electronics 3 cr.
A course on semiconductors; PN junctions; diodes and diode circuits; MOS transistor and applications such as amplifier and switch; bipolar junction transistor and applications such as amplifier and switch; and circuit simulation using SPICE. Prerequisite: EECE 290, and pre- or corequisite: FEAA 200.

EECE 310L Electric Circuits Laboratory 1 cr.
A laboratory course that covers passive electronic components; laboratory instruments; voltage-divider circuits; sources and Thevenin's Theorem; RC lead-lag networks; series resonance; the transformer; op-amp circuits; single-phase rectifier circuits; LEDs; Zener diode regulator; diode clamping and clipping; BJT and MOSFET characteristics. Pre- or corequisite: EECE 310.

EECE 311 Electronic Circuits 3 cr.
A course on BJT amplifiers; MOSFET amplifiers; differential amplifiers; frequency response of amplifiers; feedback; operational amplifiers; oscillators; digital CMOS circuits; SPICE simulations. Prerequisite: EECE 310.

EECE 312 Electronics (for Mechanical Engineering students) 3 cr.
This course introduces fundamentals of electronics and electronic circuits to non- majors. Its objectives are to provide concise treatment of the basic concepts of electronic components and to introduce students to basic analog and digital electronic circuits. The course covers the fundamentals of semiconductor diodes, transistors, operational amplifiers and their applications, digital circuits and systems, and basic instrumentation. Prerequisite: EECE 210.

EECE 312L Circuits and Electronics Lab 1 cr.
A laboratory course for non-majors that covers passive electronic components, laboratory instruments, voltage-divider circuits, sources and Thevenin's Theorem, diode circuits and applications, transistor applications, op-amp circuits, passive filters, digital circuits and instrumentation. Pre- or corequisite: EECE 312.

EECE 320 Digital Systems Design 3 cr.
This course introduces basic principles and practices of combinational and sequential design of digital systems: binary codes, Boolean algebra, combinational circuits design, combinational and sequential building blocks, and design of finite state machines. The course introduces hardware description language (VHDL); students design and implement two projects using VHDL, one for a combinational circuit and another for a sequential circuit. Prerequisites: EECE 230 or EECE 231 or CMPS 200 or CMPS 201.

EECE 321 Computer Organization 3 cr.
This course covers single-core microprocessor computer organization and basic input/ output mechanisms. Students learn how to program microprocessors at the assembly level and how to design the main core components of a von Neumann computer system, including its instruction set architecture, datapath, control unit, cache and system buses. To consolidate the material, students work on a VHDL design project of a single- cycle MIPS microprocessor core. Prerequisites: EECE 320 and Pre- or corequisite EECE 330.

EECE 321L Computer Organization Laboratory 1 cr.
A laboratory course with experiments in computer organization and interfacing techniques; digital hardware design using CAD tools and FPGAs; program-controlled and interrupt-driven I/O; memory organization; simple peripheral devices and controllers; bus interfaces; microcontroller-based designs. Pre- or corequisite: EECE 321.

EECE 330 Data Structures and Algorithms 3 cr.
This is an introductory course in data structures and algorithms with an emphasis on programming. The course uses the C++ programming language. Topics include: elements of C++, memory management, C++ classes and templates, linked-lists, sacks, queues, standard template library, binary trees, binary search trees, balanced trees, heaps, priority queues, hashing, graph traversals, introduction to graph algorithms. The course has a weekly lab. Prerequisites: EECE 230 and Pre- or co-requisite: MATH 211 or CMPS 211.

EECE 331 Design and Analysis of Algorithms 3 cr.
This course covers techniques for the design and analysis of efficient algorithms. Topics include: divide and conquer, dynamic programing, and greedy design strategies; sorting algorithms including merge sort, randomized quicksort, counting sort, and radix sort; median and order statistics algorithms; sorting lower bound; matrix multiplication and elementary arithmetic algorithms; balanced search trees; augmenting data structures; hash tables; data structures for disjoint sets; amortized analysis; graph traversal algorithms and applications, minimum spanning tree algorithms, shortest path algorithms; maximum flow; introduction to NP completeness. Prerequisite: EECE 330.

EECE 332 Object-Oriented and Effective Java Programming 3 cr.
This course covers object-oriented programming in addition to other essential and effective programming concepts using Java. Topics include: basic UML, data abstraction and encapsulation, inheritance, polymorphism, generics, exception handling, GUI programming, data persistence, database connectivity with JDBC, multi-threading and basic mobile app development. Other topics might include internationalization, web programming, and visualization. This course has a substantial lab component. Prerequisite: EECE 330.

EECE 334 Programming Language Design and Implementation 3 cr.
This course examines the design and implementation of widely adopted programming languages. Topics include data types; bindings; run-time management; object- orientation; syntax analysis; semantic analysis; and the implementation of compilers and interpreters. Functional and logic programming principles are also covered. Prerequisite: EECE 332.

EECE 338 Theory of Computation 2 cr.
This course covers the basics of automata and language theory, computation theory, and complexity theory. The first part of the course is about automata and regular languages, context free grammar, Church's thesis, decidability, and reducibility. Topics in the second part of the course include: time complexity and NP-completeness, space complexity, polynomial-space and log-space computations, circuit complexity, probabilistic computations and complexity classes, approximation algorithms, and selected topics as time permits. Prerequisites: EECE 330 and STAT 230 or STAT 233.

EECE 340 Signals and Systems 3 cr.
This course covers basic concepts and methods related to continuous and discrete-time signals and systems. The course includes: signals and systems and their properties, linear time-invariant systems, stability analysis, sampling of continuous-time signals, z-transform, discrete Fourier transform, time and frequency domain representations of discrete-time signals and systems, and introductory concepts in communications. Prerequisite: EECE 290 and MATH 202.

EECE 350 Computer Networks 3 cr.
A course that outlines data communications; wide area networks; circuit and packet switching; routing; congestion control; local area networks; communications architecture and protocols; internetworking. Students cannot get credit for both EECE 350 and EECE 351. Prerequisites: EECE 330.

EECE 351 Computing Networks and Services 3 cr.
A course that outlines data networks and cloud services, application layer protocols, web services and related protocols, cloud computing and service models, socket programming, TCP service protocols, internetworking and software-defined networking. Students cannot get credit for both EECE 350 and EECE 351. Prerequisites: EECE 330.

EECE 370 Electric Machines and Power Fundamentals 3 cr.
The course covers three-phase circuits, magnetic circuits, transformers: ideal and real, construction, operation, autotransformers and three-phase transformers; fundamentals of AC machine: construction and basic concepts; synchronous generators: construction, equivalent circuits, testing and performance characteristics; induction motors construction, principle of operation, tests, power and torque expressions. Prerequisite: EECE 290.

EECE 380 Engineering Electromagnetics 3 cr.
This course covers the fundamentals of electromagnetics. It deals with the study of static electric fields in vacuum and dielectrics, conductors, capacitance, electrostatic energy and forces;

static magnetic fields, Biot-Savart law, Ampere's law, vector magnetic potential, inductance, Maxwell's equations for time varying fields, Faraday's law, plane wave propagation, in lossless media; transmission lines and their lumped-element model, transmission line input impedance. Prerequisites: EECE 210 and MATH 202.

EECE 401 Biomedical Engineering Seminar 1 cr.
Biweekly seminars given by members of the Maroun Semaan Faculty of Engineering and Architecture or by guest speakers. The seminars cover a range of biomedical engineering topics of theoretical and professional interest. Students are required to submit a graded assignment based on each seminar. The seminar is required of all students taking the Biomedical Engineering minor. Students cannot receive credit for both EECE 401 and BMEN 600. Prerequisite: EECE 601 or EECE 603 or MECH 633.

EECE 410L System Integration Laboratory 1 cr.
A laboratory course that introduces students to a variety of electronic systems that will help them better realize a functional device. The laboratory covers a wide range of areas ranging from basic electronics, motor control, communication, micro-controllers, human machine interface, signal generation and measurement, and instrumentation. In addition to the mentioned topics, students are introduced to C language programming for embedded systems and techniques of circuit design and fabrication. Prerequisites: EECE 310L and Pre- or corequisites: EECE 321L and EECE 311.

EECE 411/611 Analog Integrated Circuits 3 cr.
A course on the design, analysis, and simulation of analog integrated circuits with an emphasis on MOS circuits; differential and operational amplifiers, bandgap references; applications of analog integrated circuits such as switched capacitor circuits, oscillators, and phase locked loops. Introduction and extensive use of CAD tools for analog circuit simulation. Prerequisites: EECE 311.

EECE 412/612 Digital Integrated Circuits 3 cr.
A course on digital electronic circuits; models, current equations and parasitics of CMOS transistors for digital design; study of CMOS inverter and logic gates, including analysis, design, simulation, layout and verification; advanced circuit styles; sequential circuits; advanced topics: semiconductor memories, power grid, clocking strategies, datapath building blocks, deep-submicron design issues, interconnect. CAD Tools will be used for homework assignments, labs and projects. Prerequisites: EECE 310 and EECE 320.

EECE 412L VLSI Computer Aided Design Lab 1 cr.
This is VLSI design course that introduces students to the basics of integrated circuit (IC) designs using computer aided design (CAD) tools. The lab familiarizes students with the IC design flow using the industry-standard Cadence Design Systems tools. Custom design of basic ICs is covered at the physical layout, circuit, logic and system levels. Lab assignments include design and simulation projects using CAD tools for physical layout design, schematic capture, place-and-route of standard cells, logic verification, circuit extraction and simulation. Pre- or corequisite: EECE 412 or EECE 612.

EECE 420 Digital Systems Design II 3 cr.
This course focuses on principles and methodologies of digital logic design at the block and subsystem levels. It covers the design of relatively large and complex digital systems including arithmetic blocks, datapath subsystems, datapath controllers, programmable storage and logic devices, and memory buffers. Synchronous and asynchronous logic design principles are covered. Behavioral modeling and synthesis of combinational and sequential logic are discussed. The Verilog language is used. The course includes a design project using FPGAs. Prerequisite: EECE 320.

EECE 421 Computer Architecture 3 cr.
A course on the principles, techniques and trade-offs used in designing modern processor core architectures. Topics include benchmarking and performance evaluation; hardware instruction level parallelism techniques (pipelining, superscalar, out-of-order execution, branch prediction); software instruction level parallelism techniques (loop unrolling, software pipelining, predicated execution, EPIC architecture), virtual memory and high-performance memory systems. Students will work on a VHDL design project of a 2-wide superscalar microprocessor core. Prerequisite: EECE 321.

EECE 422 Parallel Computer Architecture and Programming 3 cr.
A course on high-performance computer architectures with emphasis on shared memory and distributed parallel architectures and programming models. Topics include: multicore processors; SIMD processors; UMA, NUMA and COMA shared-memory multiprocessors; distributed multiprocessors; snoopy and directory-based cache coherence protocols; memory consistency models; high performance synchronization methods; speculative lock elision; and transactional memory programming model. Students work on designing parallel programs using the OpenMP threading environment and MPI message passing programming standard. Prerequisite: EECE 321.

EECE 423/623 Reconfigurable Computing 3 cr.
A course on reconfigurable computing systems and applications. Contemporary FPGA architectures. FPGA design flows and tools. High-level synthesis. Hardware/software partitioning. Host, memory and peripheral interfaces. Operating system support. Dynamic partial reconfiguration. Classical and emerging applications. Students work on a set of design assignments and a research project using appropriate FPGA development boards and tools. Prerequisite: EECE 321.

EECE 425/625 Embedded and IoT Systems 3 cr.
A course on contemporary embedded systems design the-. The system design process; microcontroller architectures and programming; standard peripheral device controllers (GPIO, timers/counters, interrupts); serial interfaces (RS232, SSI/SPI, I2C, USB); displays; memory devices and DMA; IoT and network interfaces; analog/digital conversion; pulse-width modulation; motor control; embedded operating systems. Students work on a set of design assignments and a major project using appropriate microcontroller development boards and tools. Prerequisite: EECE 321.

EECE 430 Software Engineering 3 cr.
A course that teaches students modern processes and tools for working on software projects, including the design, development, testing, and deployment of software systems. They will understand and use agile development methodologies and tools, including lo-fi UI sketching, user stories, behavior-driven development, and version control for team-based development, management tools, and design patterns. The course requires the completion of a group-based real-life software project. Prerequisite: EECE 330.

EECE 430L Web, Mobile, and Application Development Lab 2 cr.
A two-credit lab course that takes the students on a journey whereby they build and deploy software systems on several platforms including standalone desktop applications, mobile devices, application servers and web applications. The course consists of one weekly lecture which covers tutorials in addition to one weekly lab session where students apply the tutorials. This is a BYOD course. The lab exercises culminate in students building a software game or a computer-aided design tool that works seamlessly across different platforms while sharing the same core business logic. Prerequisite: EECE 330.

EECE 431L Programming Contest Lab 1 cr.
The objective of this lab is to design and implement efficient solutions for algorithmic questions and puzzles. Students' submissions will be evaluated by an automated judge. The lab helps prepare students for programming competitions and interviews in software companies. Each lab session is focused on a category of problems including data structures, searching, dynamic programming, graph algorithms, greedy algorithms, geometric algorithms, algorithmic number theory, and network flow. Prerequisite: Grade above 3.2 in EECE 331.

EECE 432 Operating Systems 3 cr.
This course covers the principles of operating systems and systems programming. The topics discussed in class are processes, threads, concurrency and synchronization, scheduling, deadlocks, memory management, file systems, i/o devices, parallel and distributed systems, and security. The course will be accompanied by hands-on assignments involving contemporary linux kernels. Prerequisite: EECE 321. Students cannot receive credit for both EECE 432 and CMPS 272 and CMPS 240.

EECE 433 Database Systems 3 cr.
This course is a practical introduction to concepts of database design and database system implementation: SQL, data modeling, database storage and indexing, database design theory, database application development, normalization, relational algebra, relational calculus and an introduction to data mining. Students cannot receive credit for both EECE 433, CMPS 277 and CMPS 244. Prerequisite: EECE 330.

EECE 434L Software Prototyping Lab 1 cr.
This is a one credit lab course that introduces students to fast productive scripting tools that allow them to produce prototypes for their software projects or accomplish a transient computational task in a relatively fast timeframe. The lab will introduce students to scripting (ksh, csh, bash, bat), domain specific scripting languages (Awk, ANTLR, Lex/Yacc), interpreted languages (Perl, Python, Ruby) and interactive computational languages (Tcl, Matlab and R). Students will also learn how to take a prototype and turn it into a robust application once needed. Prerequisite: EECE 332.

EECE 435L Software Tools Laboratory 1 cr.
This course introduces software tools that enable engineers to become more effective and productive at writing quality code. Students are grouped into teams of two (or three) to undertake a software project. The project will reinforce object oriented programming concepts and will involve software tools that expose students to source control, documentation, debugging, build automation, testing, profiling, configuration and deployment. Students have the choice of using Java or C++ to conduct their work. Prerequisite: EECE 330.

EECE 437 Software Architecture and Design Fundamentals 3 cr.
This course covers fundamental principles of software design and architecture from construction, analysis and practice perspectives. The course details the design and construction of software products for better utility. It details software abstractions of process, data, transactions and interaction. It discusses design methods such as structural, object, aspect and feature oriented design. It then discusses deployment, interoperability, reuse, patterns, anti-patterns and refactoring. The concepts will be illustrated in the context of course projects and with open source supporting tools. Some projects will be built from scratch and some will be built based on existing legacy code. Prerequisite: EECE 330.

EECE 438 Software Engineering II 3 cr.
This course aims to develop a broad understanding of advanced concepts in software engineering including: system dependability, component-based software engineering, distributed software engineering, service-oriented software engineering, real-time software engineering, user interface design, and software management. The students will apply the

learned techniques in assignments. They will work on a specific advanced topic in software engineering, prepare a report and give a short presentation on the selected topic. Prerequisites: EECE 430.

EECE 439 Cloud computing 3 cr.
This course aims to develop a broad understanding of cloud computing including: data center design, infrastructure, cloud storage technologies, types of clouds and service models, virtualization and containerization, automation and orchestration, programming models, administration, security and privacy, and applications. The students will apply the learned techniques in assignments and a team project. Prerequisites: EECE 330.

EECE 440/640 Wireless Communications 3 cr.
A course that covers the fundamentals of wireless communications with emphasis on wireless channel modeling; digital modulation in wireless channels; diversity techniques; channel coding and interleaving in fading channels; adaptive equalization; multiple access techniques; the cellular concept; overview of current wireless communications systems. Prerequisite: EECE 442.

EECE 442 Communication Systems 3 cr.
This course introduces students to the transmission and reception of analog signals; performance of analog communication systems in the presence of noise; analog to digital conversion and pulse coded modulation; transmission and reception of digital signals; performance of digital communication systems in the presence of noise and inter-symbol interference. Prerequisites: EECE 340 and STAT 230 or STAT 233.

EECE 442L Communications Laboratory 1 cr.
A laboratory course with experiments covering the following topics: AM and FM modulation/demodulation, sampling and quantization, digital modulation (PSK, FSK, MSK, GMSK), digital demodulation and inter-symbol interference. Prerequisite: EECE 442.

EECE 444/644 Stochastic Processes, Detection and Estimation 3 cr.
This is a graduate-level introduction to the fundamentals of detection and estimation theory involving signal and system models in which there is some inherent randomness. The concepts that we develop are extraordinarily rich, interesting and powerful, and form the basis for an enormous range of algorithms used in diverse applications. The material in this course constitutes a common foundation for work in the statistical signal processing, communication and control areas. Prerequisites: STAT 230 or STAT 233 and EECE 340.

EECE 446/646 Data Communications 3 cr.
This course provides an integral view of data communication systems and their digital signal-processing solutions at the link level. The course studies contemporary techniques for signal representation (sampling, quantization, compression), signal transmission and reception (modulation, data detection, channel estimation), and error correction coding (soft and hard, code-specific and noise-centric channel decoding). Conventional signal processing techniques are compared to machine-learning-based solutions under practical multi-antenna and high-frequency wireless constraints. The techniques are studied from information-theoretic and algorithmic/architectural (complexity) perspectives, laying the foundations for analysis and design. Prerequisite: EECE 442.

EECE 451 Mobile Networks and Applications 3 cr.
This course covers mobile networking topics with focus on wireless networking technologies and mobile computing applications. It addresses the following standards, mostly at the physical and MAC layers levels: Bluetooth, ZigBee, Wi-Fi, GSM, UMTS and LTE. It also touches on technologies that are part of LTE-advanced set of technologies and covers Mobile IP. From the applications side, the course gives an overview of Web Services, virtualization and

cloud computing. The course includes a project on mobile app development that involves communication among mobile devices. Prerequisite: EECE 350 or EECE 351.

EECE 451L Internetworking Laboratory 1 cr.
This laboratory course covers the technologies and protocols of the Internet. The experiments cover IP, ARP, ICMP, UDP, TCP, DNS, routing protocols (RIP, OSPF, BGP), network address translation (NAT), dynamic host configuration (DHCP), SNMP and IP multicast. Prerequisite: EECE 350 or EECE 351.

EECE 454/654 Communication Networks-Modeling and Optimization 3 cr.
The course covers the modeling and optimization of communication networks with applications that span fundamental and emerging design problems. Topics include modeling network resources, performance metrics, and requirements; optimization problem formulations and solution methods for multihop communications, resource allocation, network planning and topology design; and emerging research problems such as drone-based cell planning, edge computing, and ultra-low latency communications. Prerequisite: EECE 350 or EECE 351.

EECE 455/632 Cryptography and Networks Security 3 cr.
This course provides an overview of encryption and network security. The topics include: classical encryption techniques, block ciphers and the data encryption standard, finite fields, advanced encryption standard, confidentiality using symmetric encryption, public-key cryptography, key management, hash and MAC algorithms, digital signatures, authentication applications, Web security, email security and IP security. Prerequisite: Senior standing.

EECE 460 Control Systems 3 cr.
This course seeks to impart in students a sound understanding of fundamental principles in control engineering based on analog technologies. The course includes: mathematical modeling of linear continuous time invariant single input-single output dynamical systems; transfer functions and state space models, performance specifications, analysis and design of closed loop analog control systems. Prerequisite: EECE 340.

EECE 460L Control Systems Laboratory 1 cr.
This course involves students in the practical implementation of concepts acquired in EECE 460 by analyzing different types of dynamical systems, designing and understanding controllers suitable to specific models, simulating system responses, and experimentally verifying the effectiveness of various control schemes. Pre- or corequisite: EECE 460.

EECE 461 Instrumentation 3 cr.
A design course for complete instrumentation systems, including measurements, sensors, data acquisition and component integration. Application areas and course projects include industrial control, laboratory measurements, automation systems and the like. This course is completed with a set of laboratory experiments. Prerequisite: Senior standing.

EECE 462L Industrial Control Laboratory 1 cr.
A laboratory that addresses topics related to industrial automation and process control. Experiments include Programmable Logic Controllers (PLC), Supervisory Control and Data Acquisition (SCADA), Human Machine Interface (HMI), Industrial Networks, Machine Vision and Motion Control Applications. Prerequisite: EECE 460 or MECH 431.

EECE 463/MECH 555 Artificial Intelligence for Control Systems 3 cr.
This is an introductory course in the evolving field of artificial intelligence (AI). It aims at giving students a solid foundation in AI by covering basic techniques such as A* searching, reasoning, object tracking, path planning and learning as applied to control systems and manufacturing.

The project and lab assignments will emphasis design of intelligent control agents capable of basic learning. Prerequisite: EECE 460 or MECH 436.

EECE 470/670 Power System Planning 3 cr.
The course investigates electric energy and peak demand forecasts using weather sensitive, time curve, autoregressive and causal models; generation reliability evaluation, loss of energy expectation, energy limited units, probabilistic production costing, generating capacity expansion analysis and maintenance scheduling; operational planning, unit commitment, hydrothermal coordination; power system security classification, contingency analysis, external equivalents, optimal power flow; planning in a competitive electric power environment. Prerequisite: EECE 471

EECE 470L Electric Machines Laboratory 1 cr.
This course covers open circuit, short circuit and load test; unbalanced loading and parallel operation of transformers; speed control and load characteristics of shunt, series and compound DC machines; induction machines: blocked rotor, no-load and loading tests; operation of single-phase induction motors; operation of a synchronous machine connected to a large external source. Prerequisite: EECE 370.

EECE 471 Fundamentals of Power Systems Analysis 3 cr.
This course covers three-phase systems, generation modeling review and generation capability curve; transformers, autotransformers, three-winding transformers and regulating transformers. Calculation of transmission line parameters, evaluation of steady state operation of transmission lines, reactive power compensation, line capability, power flow analysis using Gauss-Seidel and Newton-Raphson methods, economic load dispatch, symmetrical fault analysis. Prerequisite: EECE 370.

EECE 471L Power Systems Laboratory 1 cr.
This lab course covers various aspects of power systems: measurement of the characteristics of a transmission line and assessment of its voltage drop and losses; synchronization and operation of a generator connected to an infinite bus system; load characteristics of a synchronous motor and effect of field excitation; effect of voltage levels and load types on power transmission; load flow data preparation and system study; system analysis of symmetrical and unsymmetrical faults; transient stability. Prerequisite: EECE 471.

EECE 472 Renewable Energy Systems 3 cr.
This course covers the fundamentals of renewable electric energy systems and their applications. It will introduce students to solar energy, both solar thermal and photovoltaics (PV), wind energy, micro-hydro, biomass, and geothermal. Students will learn the technical, economic, environmental, and social aspects of renewable energy and its link with the energy sector and economic development. Prerequisite: EECE 210

EECE 473 Power Electronics 3 cr.
This lab course includes an overview of power electronics devices used and their desired characteristics; diode circuits and rectifiers, effect of source inductance, three- phase rectifiers; DC-DC switched mode converters, buck, boost and buck-boost circuits, bridge converter; pulse-width modulated inverters, voltage control, harmonics, three-phase inverters; introduction to gate and base drive circuits; snubber circuits. Prerequisite: EECE 310.

EECE 473L Power Electronics and Drives Laboratory 1 cr.
This lab course includes experiments to study the following: induction motor torque- speed curve and starting characteristic, induction motor speed control through a 4-quandrant drive, single phase capacitor-start induction motor, AC to DC converter, DC to DC converters; buck,

boost and buck-boost regulators, DC to AC inversion, AC to AC converter. Pre- or corequisite: EECE 473.

EECE 474 Electric Drives 3 cr.
A course that covers steady-state analysis of poly-phase induction motors, starting and control; AC drives: solid-state control, DC link in adjustable speed drives, voltage and frequency controls, braking and plugging, affinity laws; DC motors, DC drives: rectifier and chopper drives, braking. Stepper motors: types, operational characteristics, control algorithms, power drive configurations. Special-purpose motors. Prerequisite: EECE 370.

EECE 475 Building Management 3 cr.
The Building Management Systems (BMS) course will cover the design and implementation of all electrical and control systems, which are at the heart of the industrial, commercial, utility, and residential buildings of today. The course will include a wide range of relevant topics and equipment, from power distribution equipment all the way to smart sensors and field instruments, all of which are connected to the monitoring and supervision system of the building for better control, enhanced security, and higher efficiency.

EECE 476 Power System Design, Control, and Protection 3 cr.
This course covers the main components and subsystems of a Power Distribution System, namely step-up and step-down transformers, HV and MV Switchgears and associated circuit Breakers, Network Protection Devices, Electronic (and electromechanical) Protection Relays theory and operation, Overhead and Underground Transmission Lines, Substation and Substation Automation, Data Transmission. The course includes a sizable section about Power Distribution Monitoring and Control along with the associated SCADA/DCS Control Systems and the ever more important Cyber Security planning in connection with these control and monitoring systems. Prerequisite: EECE 370.

EECE 477 Electronic Drive Systems 3 cr.
A course that covers electronic drives, sensing, and control of electric machines; Induction motor drives: dc/ac inverter basics and modulation, variable frequency drives, constant V/f control, modified V/f control, slip compensation; Permanent magnet synchronous machines (PMSM), brushless dc (BLDC) machines, and their drives; switched reluctance motor and generator drives; stepper motors, drives, and position control; Electronic drives for renewable energy systems: wind turbines, hydro, marine, and hydrokinetic systems. Prerequisites: EECDE 310 and EECE 370.

EECE 478/678 Advanced Power System Analysis 3 cr.
A course on optimal dispatch of generation, symmetrical components and unbalanced faults, transient stability, control of generation, state estimation in power systems and power system simulation. Prerequisite: EECE 471.

EECE 479/679 Energy Efficiency in the Power Sector 3 cr.
Introduction to the concept of sustainable development and its roots as an interdisciplinary vision, the framework of the 17 SDGs, with 169 targets, and the history of development, achievements and challenges facing the SDGs deployment, role of engineers in achieving sustainability, outcomes of COP28. Selected topics covered in the course include: Energy conversion, generation and cogeneration, load duration curves, losses and efficiency optimization, theory and application of energy analysis techniques, energy audit: definition and types, data analysis, reporting and recommendation. Prerequisites: EECE210, Senior standing.

EECE 480/680 Antennas for Wireless Communications 3 cr.
This course provides students with an understanding of basic principles of antenna analysis and design for wireless communications. The course covers an overview of the fundamental characteristics and parameters of antennas, an overview of analytical methods used to analyze

and design antennas with application to some basic antenna structures such as linear antennas, loop antennas, antenna arrays and microstrip antennas. Prerequisite: EECE 380.

EECE 480L Electromagnetics and Radio Frequency Laboratory 1 cr.
A laboratory course with experiments on concepts of applied electromagnetics and radio frequency systems. This lab includes the demonstration of Coulomb's, Ampere's and Faraday's laws; the design and implementation of capacitors and inductors; the realization of a wireless power transfer system; the design of transmission lines and impedance matching networks; the simulation and fabrication of passive and active RF circuits, wire and planar antennas as well as a full transceiver architecture. Prerequisites: EECE 340 and EECE 380.

EECE 481 Applications of Electromagnetic Fields 3 cr.
This course covers basic concepts and methods related to time varying electromagnetic wave propagation. The course includes full analysis of Maxwell's equations, plane wave propagation, reflection and transmission in lossless and lossy media, normal and oblique incidence, waveguides, impedance matching and introduction to microwave engineering. Prerequisite: EECE 380.

EECE 482 Applied Radio Frequency Engineering 3 cr.
The course introduces fundamental design concepts of radio frequency (RF) circuits and systems along with their physical realization. The course theoretical aspect is supplemented by laboratory implementation of the designed circuits and systems. The course covers topics such as microstrip lines, network analysis, distributed impedance matching as well as electromagnetic interference and compatibility. Furthermore, the course introduces the design and development of passive and active RF circuits and systems such as filters, power dividers, directional couplers, low-noise amplifiers, power amplifiers, down conversion mixers, oscillators, multi-technology transceivers and radars. The course provides students with a design capability accompanied by hands-on experience on applied RF engineering. Prerequisite: EECE 380.

EECE 484/684 Microwave Engineering 3 cr.
This course focuses on the analysis and design of passive microwave circuits. It covers the fundamentals for radio frequency and microwave engineering. It discusses the theories of transmission lines, waveguides, impedance matching, microwave networks, scattering parameters, power dividers, directional couplers, microwave resonators and microwave filters. The course enables students to study and analyze their own microwave network using computer-aided design tools and measurement equipment. Prerequisite: EECE 380.

EECE 485/685 Radio Frequency (RF) Circuits Design 3 cr.
This course covers advanced RF circuit design principles and techniques, beginning with the behavior of passive components like high-frequency resistors, capacitors, and inductors. Students learn to design RF circuits using transmission line theory and the Smith Chart, then delve into the study of two-port networks and their representations in terms of S-parameters. The course emphasizes impedance matching, biasing, and RF transistor modeling. Various RF amplifier configurations such as low noise, high power, and broadband amplifiers are explored along with their applications. Nonlinear systems in RF oscillator and mixer circuits are discussed, as are RF switches and phase shifters. Throughout the course, students use computer-aided design tools for simulation and analysis, gaining practical skills in RF circuit design. Prerequisites: EECE 310 and EECE 380.

EECE 486/686 Radio Frequency (RF) Transceiver Design 3 cr.
This course targets the physical layer of a communication system by focusing on the interactions between the various transceiver blocks. The course addresses the design and operation of the

components that reside between the signal processing unit and the antenna within the RF chain. The course also details the functional level modeling of different transceiver architectures by accounting for the gain, noise, nonlinearity, sensitivity and dynamic range. In addition, students are exposed to recent computer-aided simulation tools and measurement techniques through a set of laboratory experiments that are tailored based on the course content. As a result, the course equips the students with theoretical and practical experience in RF transceiver design. Prerequisites: EECE 311 and EECE 380.

EECE 487/687 Radio-Frequency Integrated Circuit (RFIC) Design 3 cr.
The course addresses the analysis and design of passive and active Radio Frequency Integrated Circuits (RFICs). The course introduces the design of on-chip lumped elements and passive RF components. In addition, it includes the design of various RF blocks such as low noise amplifiers, power amplifiers, oscillators, mixers, phase locked loops, frequency synthesizers, and switches. The course provides students with hands-on experience in the simulation of RFICs as well as the different calibration and de-embedding techniques for on-wafer measurements. As a result, the students will be equipped with essential theoretical and practical experience in RFIC design. Prerequisites: EECE 380 and EECE 311.

EECE 488/688 Engineering Bio-Electromagnetics 3 cr.
This course discusses the interaction between biological material and electromagnetic fields. The course introduces Bio-Electromagnetics along with its sub-divisions and reviews the fundamental properties of electromagnetic fields and their propagation characteristics in lossy biological tissues. The course then elaborates on the electromagnetic properties of biological tissues from a bioelectric perspective. Bio- Electromagnetism is then analyzed at DC, extremely low frequencies, radio frequencies, up to Terahertz frequencies and beyond. The concept of Dosimetry and the principles of energy absorption in biological tissues are then studied along the design of electromagnetic sensors and electrodes for monitoring, reception and stimulation in the human body. The human body is then analyzed as a communication channel and as a generator of electromagnetic fields. The course is concluded with an introduction to the various electromagnetic simulation tools and the corresponding measurement techniques. Prerequisites: EECE 380 and EECE 340.

EECE 490/690 Introduction to Machine Learning 3 cr.
The course provides an overview of machine learning theory and algorithms that learn from experience to predict or control yet to be seen instances. The course discusses the intuition and the theory of some selected modern machine learning concepts as well as practical know-how to successfully apply them to new problems. It covers topics in supervised learning such as parametric/ non-parametric, generative/ discriminative algorithms for classification and regression and in unsupervised learning for clustering, dimensionality reduction and reinforcement learning. The course also includes case studies and applications so that students can gain practice on regularization, model selection, parameter estimation, Bayesian networks, hidden Markov models, support vector machines, reinforcement learning, neural networks and deep learning. Students cannot receive credit for both EECE 664M and EECE 633 and 667. Prerequisites: EECE 330, MATH 218 or MATH 219, and STAT 230 or STAT 233.

EECE 491/691 Digital Signal Processing 3 cr.
Digital Signal Processing (DSP) is at the heart of almost all modern technology. This course introduces the fundamentals of DSP systems, including properties of discrete- time linear systems, digital filter design, sampling and reconstruction, A/D and D/A conversion, quantization, discrete-time Fourier analysis, spectral analysis, sample-rate conversion, FFT and fast convolution, filter structures and realizations, and multi-rate DSP and filter banks. The course also discusses applications of DSP in areas such as speech/audio processing, autonomous vehicles and software radio. It includes a project related to implementations of DSP applications on embedded processors. Prerequisite: EECE 340.

EECE 499 Undergraduate Research 3 cr.
This course requires participation, under supervision of a faculty member, in a research project. Before registering, the student must create a proposal regarding the nature of the research, the specific goals of the research and the desired final report outcome; this proposal must be submitted to and approved by the supervising faculty member and the department before registering. Prerequisites: Completion of 65 required credits in the major and a cumulative GPA of 3.3 or above.

EECE 500 Approved Experience 1b
This is an eight-week professional training course in electrical and computer engineering. (Students who register FEAA 500 can't register EECE 500.)

EECE 501 Final Year Project 3 cr.
A supervised project in groups of normally three students aimed at providing practical experience in some aspects of computer, communications and electrical engineering. Students are expected to define the project, state its objectives, complete a literature survey, set project specifications and select a design method. They are also expected to do some preliminary modeling and analysis, and acquire the necessary material needed for the completion of the project in the spring term. A professional report and oral presentation are also required. Prerequisite: EECE 410L or EECE 430L.

EECE 502 Final Year Project 3 cr.
This is a continuation of EECE 501. Students are asked to deliver a product that has passed through the design, analysis, testing and evaluation stages. The course also requires the production of a professional report that includes a description of the design process, implementation and testing, verification and validation and a critical appraisal of the project. An oral presentation and poster are also project deliverables. Prerequisite: EECE 501.

EECE 503 Special Topics in ECE 3 cr.
Special Topics in ECE

EECE 505 Final Year Project Accelerator 3 cr.
This sequence of two courses provides selected Final Year Project (FYP) students with the knowledge, tools, and mentorship needed to transform their technical FYP into a viable business by the time they graduate. Topics include design thinking, business planning, business modeling, team formation, marketing, finance, legal aspects, and pitching. Prerequisite: FEAA 501.

EECE 560/MECH 530 Mechatronics 3 cr.
A course that discusses mechatronics; data; numbering systems, architecture of the 8-bit Motorola MC68HC11 microcontroller, assembly language programming, A/D and D/A conversion; parallel I/O programmable timer operation, interfacing sensors and actuators, applications; a team project on design and implementation of a mechatronic system. Prerequisites: EECE 312, and MECH 430 or EECE 461.

EECE 601 Biomedical Devices and Equipment 3 cr.
The course discusses the main types of biomedical devices and equipment in terms of the physical principles underlying their operation, their operational characteristics, and their applications. The discussion includes: ultrasound systems, blood instruments, cardiac and respiratory devices and equipment, clinical laboratory equipment, radiology equipment. X-ray machines, CT scanners, PET scanners, and magnetic resonance imaging systems. Prerequisites: BIOL 210 or BIOL 202 or PHYL 246; and EECE 210 or PHYS 228 and PHYS 228L; or consent of the instructor.

EECE 603 Biomedical Signal and Image Processing 3 cr.
Fundamentals of digital signal processing as implemented in biomedical applications. It provides a concise treatment of the tools utilized to describe deterministic and random signals as the basis of analyzing biological signals: data acquisition, imaging; denoising and filtering, feature extraction, modeling. The course is tightly coupled with a practical component through laboratory projects. Examples include the auditory system, speech generation, electrocardiogram, neuronal circuits and medical imaging. Students should have reasonable software skills in Matlab. Pre- or corequisite: EECE 340 and STAT 230 or STAT 233.

EECE 605 Neuromuscular Engineering 3 cr.
Introduction on the nervous system, electrophysiology and chemical kinetics. The cell membrane in the steady state: resting membrane voltage and membrane equivalent circuit. Generation and propagation of the action potential: Hodgkin-Huxley model, properties and propagation of the action potential. Synapses: neuromuscular junction, fast chemical synapses, second-messenger systems, synaptic plasticity and electrical synapses. Neurons: neuronal currents, firing patterns and signaling in dendrites. Muscle: contraction, mechanics and receptors. Control of movement: mechanics, spinal reflexes, hierarchical organization and control, locomotion, equilibrium-point hypothesis. Prerequisites: BIOL 210 or BIOL 202 or PHYL 246; and EECE 210 or PHYS 228; and PHYS 228L; and MATH 202.

EECE 611/411 Analog Integrated Circuits 3 cr.
A course on the design, analysis, and simulation of analog integrated circuits with an emphasis on MOS circuits; differential and operational amplifiers, bandgap references; applications of analog integrated circuits such as switched capacitor circuits, oscillators, and phase locked loops. Introduction and extensive use of CAD tools for analog circuit simulation. Prerequisites: EECE 311.

EECE 612/412 Digital Integrated Circuits 3 cr.
A course on digital electronic circuits; models, current equations and parasitics of CMOS transistors for digital design; study of CMOS inverter and logic gates, including analysis, design, simulation, layout and verification; advanced circuit styles; sequential circuits; advanced topics: semiconductor memories, power grid, clocking strategies, data-path building blocks, deep-submicron design issues, interconnect. CAD Tools will be used for homework assignments, labs and projects. Prerequisites: EECE 310 and EECE 320.

EECE 616 Advanced Digital Integrated Circuits 3 cr.
This course covers advanced concepts in circuit design for digital VLSI systems in state-of-the-art integrated circuits technologies. Emphasis is on circuit design and optimization techniques targeted for high-speed circuits, low-power circuits or high-density circuits. The impact of scaling, deep submicron effects, interconnect, signal integrity, power distribution/consumption and timing on circuit design is investigated. Emerging challenges in low power/low voltage design, process variations and memory design in the nano-scale era are covered. Prerequisite: EECE 412 or EECE 612.

EECE 617 Reliability and Statistical Design 3 cr.
This course explores major aspects of statistical design methodologies with particular emphasis on electrical and computer engineering problems. It covers various topics in the domain of reliability, yield estimation, variance reduction methods for purposes of extreme statistics and rare fail event estimation, modeling and optimization. Case studies will be provided to analyze manufacturability challenges of advanced circuits and implications on low power design. Prerequisite: Senior standing.

EECE 621 Advanced Computer Architecture 3 cr.
This course focuses on modern advancements in parallel computer architecture with emphasis on instruction level parallelism (ILP). Topics include: advanced branch prediction, data speculation, memory dependence prediction, trace caches, dynamic optimization, checkpoint architectures, latency-tolerant processors, simultaneous multithreading, speculative multithreading and virtual machines. A key component of the course is a research project in which students use architecture performance simulator to investigate novel architecture techniques. Prerequisite: EECE 421.

EECE 622 VLSI for Communications and Signal Processing 3 cr.
This course introduces concepts in the design and implementation of digital signal processing systems using integrated circuits. Emphasis is on the architectural exploration, design and optimization of signal processing systems for communications. Algorithm, architecture and circuit design techniques are introduced that enable joint optimization across algorithmic, architectural and circuit domains. A key component of the course is a project in which students investigate problems in the design and implementation of low-power and high-performance communication systems. Prerequisite: Senior or graduate standing.

EECE 623/423 Reconfigurable Computing 3 cr.
A course on reconfigurable computing systems and applications; Contemporary FPGA architectures; FPGA design flows and tools; High-level synthesis; Hardware/software partitioning; Host, memory and peripheral interfaces; Operating system support; Dynamic partial reconfiguration; Classical and emerging applications. Students work on a set of design assignments and a research project using appropriate FPGA development boards and tools. Prerequisite: EECE 321.

EECE 624 Digital Systems Testing 3 cr.
This course covers an overview of digital systems testing and testable design; test economics, fault modeling, logic and fault simulation, testability measures, test generation for combinational circuits, memory test, delay test, scan design and boundary scan. Prerequisite: EECE 320.

EECE 625/425 Embedded and IoT Systems 3 cr.
A course on contemporary embedded systems design. The system design process; microcontroller architectures and programming; standard peripheral device controllers (GPIO, timers/counters, interrupts); serial interfaces (RS232, SSI/SPI, I2C, USB); displays; memory devices and DMA; IoT and network interfaces; analog/digital conversion; pulse-width modulation; motor control; embedded operating systems. Students work on a set of design assignments and a major project using appropriate microcontroller development boards and tools. Prerequisite: EECE 321.

EECE 626 Hardware Accelerators for Machine Learning 3 cr.
This course provides an in-depth coverage of architectural techniques used to design accelerators for training and inference in machine learning systems, with focus on recent advances towards enabling efficient processing of DNNs. It provides an overview of DNNs, discusses various hardware platforms and architectures that support DNNs, and highlights key trends in reducing the computational cost of DNNs via hardware design changes only or through joint hardware design and DNN algorithm optimizations. It also covers various development tools that enable students to quickly get started in this field and highlights important benchmarking metrics and design considerations to be used for evaluating a plethora of DNN hardware design options. Case studies include Google's TPU, Apple's Neural Engine, Intel's Nervana processor, and ARM's Project Trillium. The course involves a semester project that focuses on developing architectures for hardware ML accelerators. Prerequisite: EECE 490 and EECE 420 or EECE 421.

EECE 631 Advanced Topics for in Algorithms 3 cr.
This is a second course on algorithms. The aim of the course is to cover general tools from probability and convex optimization with applications to randomized algorithms, approximation algorithms, and theoretical computer science in general. Topics include: introduction to randomized algorithms, tail inequalities, probabilistic method, random walks, hashing, de-randomization, introduction to approximation algorithms, basics of linear programming, algorithms for solving linear programs, linear programming relaxation and approximation algorithms, basics of semidefinite programming, semidefinite relaxation and approximation algorithms, interior point methods, and selected topics as time permits. Prerequisites: EECE 331, MATH 218 or MATH 219, and STAT 230 or STAT 233.

EECE 632/455 Cryptography and Networks Security 3 cr.
This course provides an overview of encryption and network security. The topics include: classical encryption techniques, block ciphers and the data encryption standard, finite fields, advanced encryption standard, confidentiality using symmetric encryption, public-key cryptography, key management, hash and MAC algorithms, digital signatures, authentication applications, Web security, email security and IP security. Prerequisite: Senior standing.

EECE 633 Data Mining 3 cr.
This course is an introduction to data mining. Data mining refers to knowledge discovery from huge amounts of data to find non-trivial conclusions. Topics will range from statistics to machine learning to database, with a focus on analysis of large data sets. The course will target at least one new data mining problem involving real data for which students will have to find a solution. Prerequisite: Senior standing.

EECE 634 Introduction to Computational Arabic 3 cr.
The course discusses computational challenges specific to the Arabic language including representation, rendering, processing, structure, interface and recognition. The course also discusses multilingual texts with Arabic and visits text processing techniques such as encoding, matching, tokenization, search, indexing and pattern matching. The course reviews the state of the art in automating Arabic language understanding. Prerequisite: EECE 330.

EECE 635 Theoretical Foundations of Security and Privacy 3 cr.
This course provides a rigorous framework to study security and privacy using suitable mathematical models. Such models enable the assessment of the security/privacy guarantees of a given system, including communication and computing systems and databases. In particular, this course covers both computational and information-theoretic notions of security and privacy. Students learn various adversarial models and their corresponding information-theoretic measures, in addition to basic cryptographic principles and protocols. Topics include: the Shannon cipher system, one-time pads and perfect secrecy, semantic security and the RSA algorithm, equivocation, and guessing entropy (and other measures). A particular focus is given to the notion of differential privacy and its applications. Prerequisites: EECE 330 and STAT 230 or STAT 233.

EECE 636 Automated reasoning 3 cr.
This course introduces automated reasoning basics, techniques and applications. It covers both logical and probabilistic approaches and offers a perspective on how automated reasoning algorithms are at heart of the sophisticated artificial intelligence and machine learning engines. Topics include foundations on logic and probability, backtracking strategies and satisfiability solving, construction and querying of probabilistic reasoning structures such as Bayesian networks, temporal reasoning, and classes of reasoning tasks, reductions and applications. Prerequisite: EECE 330.

EECE 637 Advanced Programming Practice 3 cr.
This is an advanced course on programming practices with a focus on verification. Teams will work in agile and extreme programming environments; they will use formal specifications, design patterns and aspect-oriented programming. Projects will involve tools for source control, debugging, code building, documentation, dynamic and static verification. Prerequisite: EECE 330.

EECE 638 Software Testing 3 cr.
The course focuses on concepts, techniques and tools for testing software. It provides practical knowledge of a variety of ways to test software and an understanding of some of the tradeoffs among testing techniques. The topics include software testing at the unit, module and system levels; functional and structural testing; regression testing; mutation testing; test suite minimization and prioritization; automatic test case generation. Prerequisite: Senior standing.

EECE 639 Advanced Techniques and Applications in Data Mining 3 cr.
A course that covers advanced topics in data mining and recent progress in this field. Discussions will include which techniques fit best for complex applications in data mining. Mining complex data will include general text mining, Arabic text mining, social network analysis, spatial data mining, mining of the World Wide Web, stream data, time-series data and sequence data. We will also discuss recent application sectors and trends in data mining in the telecommunication, biological and financial sectors. Prerequisites: EECE 330; and one of EECE 633, 667 or 693.

EECE 640/440 Wireless Communications 3 cr.
A course that covers the fundamentals of wireless communications with emphasis on wireless channel modeling, digital modulation in wireless channels, diversity techniques, channel coding and interleaving in fading channels, adaptive equalization, multiple access techniques, the cellular concept and overview of current wireless communications systems. Prerequisite: EECE 442.

EECE 640L Wireless Communications Laboratory 1 cr.
A laboratory course that covers the following topics: basics of radio network planning and optimization, radio network planning for the GSM cellular system, radio network planning for the UMTS cellular system, GSM-UMTS co-existence and co-citing, radio network planning for the WiMAX broadband system, indoor GSM drive testing measurements and analysis, outdoor GSM drive testing measurements and analysis, UMTS drive testing measurements and analysis, and measurement-based wireless channel modeling. Prerequisite: EECE 640.

EECE 641 Information Theory 3 cr.
In this course students study data transmission through introducing the field of information theory. The theory is introduced in a gradual fashion and students study its applications to communications theory, computer science, statistics and probability theory. Covering all the essential topics in information theory, students are introduced to basic quantities of entropy, relative entropy and mutual information to show how they arise as natural answers to questions of data compression, channel capacity, rate distortion and large deviation theory. Prerequisite: STAT 230 or STAT 233 or EECE 442.

EECE 642 Introduction to Coding Theory 3 cr.
This course introduces the theory of error-correcting codes with focus on the asymptotic, algorithmic and algebraic aspects. Topics include background material from combinatorics and algebra; Shannon's coding theorem; linear codes; coding bounds; classical algebraic codes: Hamming and Hadamard codes, Reed-Solomon codes and Justesen codes, and decoding algorithms; codes from graphs: low density parity check codes, expander codes, explicit constructions and decoding algorithms; and an introduction to Turbo codes. Prerequisite: Senior standing.

EECE 643/MECH 691 Convex Optimization (MECH new cross listing course)
Advanced course that covers topics such as convex sets, convex functions, convex optimization problems, scalarization for vector optimization, duality theory, optimality conditions. Example problems include least-squares, maximum likelihood estimation, minimax, and extremal volume problems. Prerequisite: Math 218.

EECE 644/444 Stochastic Processes, Detection and Estimation 3 cr.
This is a graduate-level introduction to the fundamentals of detection and estimation theory involving signal and system models in which there is some inherent randomness. The concepts that we develop are extraordinarily rich, interesting and powerful, and form the basis for an enormous range of algorithms used in diverse applications. The material in this course constitutes a common foundation for work in the statistical signal processing, communication and control areas. Prerequisites: STAT 230 or STAT 233 and EECE 340.

EECE 645 Wireless Cellular Technologies 3 cr.
A course on the evolution of cellular technologies with focus on 2G GSM technology, 3G UMTS/HSPA technology, 4G LTE technology and beyond. Topics include cellular network fundamentals; standardization; transmitter and receiver link level designs; access and core network architectures; physical channels and signaling procedures; scheduling and radio resource management; radio network planning; multiple antenna techniques; emerging topics. Prerequisite: EECE 640.

EECE 646/446 Data Communications 3 cr.
This course provides an integral view of data communication systems and their digital signal-processing solutions at the link level. The course studies contemporary techniques for signal representation (sampling, quantization, compression), signal transmission and reception (modulation, data detection, channel estimation), and error correction coding (soft and hard, code-specific and noise-centric channel decoding). Conventional signal processing techniques are compared to machine-learning-based solutions under practical multi-antenna and high-frequency wireless constraints. The techniques are studied from information-theoretic and algorithmic/architectural (complexity) perspectives, laying the foundations for analysis and design. Prerequisite: EECE 442.

EECE 647 Queuing Theory 3 cr.
A course that covers Poisson counting and renewal processes; Markov chains and decision theory, branching processes, birth death processes and semi-Markov processes; simple Markovian queues, networks of queues, general single and multiple server queues, bounds and approximations. Prerequisite: Senior standing.

EECE 651 Internet Engineering 3 cr.
A course that provides in-depth coverage of Internet architecture, Internet protocols and routing; discusses recent developments on the Internet such as IPv6, switching and mobility; and gives a detailed study of TCP. Prerequisite: EECE 350 or EECE 351.

EECE 651L Internetworking Laboratory 1 cr.
This laboratory course covers the technologies and protocols of the Internet. The experiments cover IP, ARP, ICMP, UDP, TCP, DNS, routing protocols (RIP, OSPF, BGP), network address translation (NAT), dynamic host configuration (DHCP), SNMP and IP multicast. Prerequisite: EECE 350 or EECE 351.

EECE 652 Web Server Design and Programming 3 cr.
This course concentrates on major technologies used in building Web servers. It is divided into two parts: client programming and server programming. The first part includes HTML, CSS, Java Script and XML programming. The second part is based on the ASP.NET framework (both

Forms and MVC) along with C#. It covers basic controls, validation, database interfacing, AJAX, sessions and cookies, file uploading and downloading, emails with attachments, securing websites, user controls and third-party controls. The course concludes with programming and interfacing with Web Services. The website development group-based project is a major component of the course. Prerequisite: Senior standing.

EECE 653 Multimedia and Networking 3 cr.
This course covers topics in multimedia such as system requirements, performance requirements, representation and compression. Multimedia networking is emphasized by discussing multicasting, streaming, multimedia networking protocols and quality of service-based traffic management protocols. Other topics covered include synchronization, VoIP and Internet 2. Multimedia networking applications are designed and implemented as student projects. Prerequisite: EECE 350 or EECE 351.

EECE 654/454 Communication Networks-Modeling and Optimization 3 cr.
The course covers the modeling and optimization of communication networks with applications that span fundamental and emerging design problems. Topics include modeling network resources, performance metrics, and requirements; optimization problem formulations and solution methods for multihop communications, resource allocation, network planning and topology design; and emerging research problems such as drone-based cell planning, edge computing, and ultra-low latency communications. Prerequisite: EECE 350 or EECE 351.

EECE 655 Internet Security 3 cr.
The course covers topics in Internet security. The course discusses security threats, vulnerabilities of protocols and the different types of attacks. Preventive and defensive mechanisms are covered, such as: e-mail security, web security, IP security, network management security, wireless security, intrusion detection techniques, firewalls, VPNs and tracing the source of attacks. Student projects will be composed of implementation, simulation and research components. Prerequisite: EECE 350 or EECE 351.

EECE 655L Network and Computer Security Laboratory 1 cr.
A laboratory course that addresses advanced network and computer security topics. Experiments include execution of attacks, setup of intrusion detection and prevention, securing computers and wired and wireless networks, and digital forensics. Prerequisite: EECE 350 or EECE 351.

EECE 656 Mobile Ad Hoc and Sensor Networks 3 cr.
This course covers major aspects of ad hoc and sensor networking, and tackles topics related to mobility, disconnections and battery energy consumption. The course is composed of two parts: mobile ad hoc networks (MANETs) and wireless sensor networks (WSNs). The first part provides a detailed treatment of routing protocols in MANETs, the changes to TCP to support mobility and vehicular networks. In the second part, topics covered concern information-centric routing, MAC layer provisions for energy savings, addressing, localization, time synchronization and information dissemination. The group project gives students hands-on experience in designing protocols and applications for real sensor devices. Prerequisite: EECE 350 or EECE 351.

EECE 657 Wireless Security 3 cr.
A course that covers wireless network security; security challenges in wireless networks; security problems facing existing and upcoming wireless networks; security in naming, addressing, neighbor discovery and routing; and trust and privacy. Prerequisites: EECE 350 or EECE 351, and EECE 455 or EECE 632.

EECE 660/MECH 653 System Analysis and Design 3 cr.
A course that outlines state-space models of discrete and continuous, linear and nonlinear systems; controllability; observability; minimality; Eigenvector and transforms analysis of linear time invariant multi-input multi-output systems; pole shifting; computer control; design of controllers and observers. Prerequisite: EECE 460 or MECH 436.

EECE 661/MECH 641 Robotics 3 cr.
A course discussing concepts and subsystems; robot architecture; mechanics of robots: kinematics and kinetics; sensors and intelligence; actuators; trajectory planning of end effector motion; motion and force control of manipulators; robot languages. Pre- or corequisite: EECE 460 or MECH 436.

EECE 662/MECH 655 Optimal Control 3 cr.
A course on optimization theory and performance measures, calculus of variations, the maximum principle, dynamic programming, numerical techniques, LQR control systems. Prerequisite: Senior standing.

EECE 663/MECH 656 System Identification 3 cr.
This course introduces basic mathematical tools to fit models into empirical input-output data. General time-series modeling and forecasting, such as stock prices, biological data and others. Topics include nonparametric identification methods: time and frequency response analysis; parametric identification: prediction error, least squares, linear unbiased estimation and maximum likelihood; convergence, consistency and asymptotic distribution of estimates; properties and practical modeling issues: bias distribution, experiment design and model validation. Prerequisite: Senior standing.

EECE 664 Fuzzy Sets, Logic and Applications 0 cr.
A course that outlines fuzzy sets and related concepts; logical connectives; mapping of fuzzy sets; extension principle; fuzzy relations and fuzzy set ordering; fuzzy logic inference; applications: fuzzy control, signal processing, pattern recognition, decision-making and expert systems. Prerequisite: Senior standing.

EECE 665/MECH 654 Adaptive Control 3 cr.
A course that includes the control of partially known systems; analysis and design of adaptive control systems; self-tuning regulators; model reference adaptive control of uncertain dynamic systems; typical applications. Prerequisite: EECE 460 or MECH 436.

EECE 667 Pattern Recognition 3 cr.
The course provides an overview of algorithms used in machine learning. The course discusses modern concepts for model selection and parameter estimation, decision- making and statistical learning. Special attention will be given to regression and classification for supervised mode of learning. Students will be assigned typical machine learning problems to investigate as projects. Prerequisite: Senior standing.

EECE 668 Game Theory and Decision-Making 3 cr.
This course provides a set of tools, approaches and perspectives on game theory to mimic the human elements of decision-making best described by strategy and cooperation. Topics covered include: games of skills, game of chance, cooperative, mixed motive, zero sum, coalition and repeated games. Students will be assigned real-world examples of game theory to investigate as projects. Prerequisite: Senior standing.

EECE 669/MECH 648 Nonlinear Systems: Analysis, Stability and Control 3 cr.
Introduction to the theory of systems of coupled, nonlinear, time-varying ordinary differential

equations. Topics include existence and uniqueness of solutions, stability of equilibria, nonlinear stability theory, Lyapunov analysis, Barbalat's lemma, input-to-state stability, input-output stability, nonlinear control design techniques, feedback linearization, backstepping, and sliding mode control. Prerequisite: EECE 460 or MECH 436.

EECE 670/470 Power System Planning 3 cr.
The course investigates electric energy and peak demand forecasts using weather sensitive, time curve, autoregressive and causal models; generation reliability evaluation, loss of energy expectation, energy limited units, probabilistic production costing, generating capacity expansion analysis and maintenance scheduling; operational planning, unit commitment, hydrothermal coordination; power system security classification, contingency analysis, external equivalents, optimal power flow; planning in a competitive electric power environment. Prerequisite: EECE 471.

EECE 671 Environmental Aspects of Energy Systems 3 cr.
A course that examines world energy resources and classifications; sources and effects of air pollution; air quality modeling, Gaussian dispersion models for pollution estimation; motor vehicle emissions and noise pollution; environmental impacts of electricity generation, pollution control systems, electromagnetic radiation, production and impacts in high-voltage applications; environmental impact assessment; basic concepts. Prerequisite: Senior standing.

EECE 672 Energy Planning and Policy 3 cr.
This is a course that focuses on features of modern energy planning and policy. Topics covered include the interaction among technological, economic, environmental and sociopolitical aspects of energy supply and use; electricity, oil and gas industries, and their market structures; elements of energy planning on the sector and national levels; energy decision-making under conditions of uncertainty, risk management in energy planning; liberalization of energy markets; case studies. Prerequisite: Senior standing.

EECE 673 Power Electronics Systems and Applications 3 cr.
A course that reviews converter topologies for AC/DC, DC/AC and DC/DC; power supply applications; converter applications to motor drives; utility interface of distributed energy systems; static VAR systems; flexible AC transmission; high voltage DC; power quality control; active and passive harmonics compensation. Prerequisite: EECE 473 or EECE 471.

EECE 674 Energy Storage and Sustainable Systems 3 cr.
The course covers the principles of sustainable energy systems, solar radiation, solar thermal applications, the Stirling engine, fuel cells and the hydrogen cycle. Various energy storage technologies are also investigated, e.g. thermal storage, compressed air, flywheels, batteries, and ultra-capacitors. The operation principles of each application will be discussed, its current developments and future trends, and students will design an energy storage solution for a selected application. Pre-requisite EECE 230, EECE 310, and PHYS 210.

EECE 675 PV and Wind Electric Energy Systems 3 cr.
This course seeks to impart in students a sound understanding of renewable energy systems in terms of their design, operation and economic impacts. It covers wind resource assessment and site selection. Drag and lift principles, linear momentum theory. Turbines characteristics, power and energy yield calculation. Aspects of wind drive options: horizontal and vertical axis machines, fixed and variable speed wind turbine generators. It also covers solar resource assessment. Photovoltaic cells: photo effect, P-N junction, principle of operation of PV cells, circuit models, maximum power point trackers, I-V and power characteristics, physics of shading, types and characteristics of autonomous solar energy systems, hybrid systems and grid connected systems. The economics of wind and solar energy systems. Introduction to small hydro and geothermal energy systems. Prerequisite: Senior standing.

EECE 676 Modeling and Control of Electric Drives 3 cr.
A course that covers several topics related to modeling and control of electric drives. The course introduces fundamental equations related to inductance and flux variations in a rotating machine, leading to torque production. Reference frame theory and transformations are also studied for modeling purposes. Dynamic models of three-phase induction and permanent-magnet synchronous machines are derived. Basic modeling of power electronic converters for electric drives, with focus on three-phase DC/AC inverters, are introduced. Various control strategies are studied with focus on vector control and different power electronic switching schemes in electric drives. Prerequisite: EECE 473 or EECE 474.

EECE 677 Electric Power System Stability and Control 3 cr.
A course on synchronous machine modeling and simulation, response to small disturbances and voltage instability. Topics include Park's transformation, flux linkage, voltage and state-space equations, sub-transient and transient parameters, simplified models of the synchronous machine, treatment of saturation, system reference frame, small-signal stability, power system stabilizers and bifurcation analysis. Prerequisite: EECE 678.

EECE 678/478 Advanced Power System Analysis 3 cr.
A course on optimal dispatch of generation, symmetrical components and unbalanced faults, transient stability, control of generation, state estimation in power systems and power system simulation. Prerequisite: EECE 471.

EECE 679/479 Energy Efficiency in the Power Sector 3 cr.
Introduction to the concept of sustainable development and its roots as an interdisciplinary vision, the framework of the 17 SDGs, with 169 targets, and the history of development, achievements and challenges facing the SDGs deployment, role of engineers in achieving sustainability, outcomes of COP28. Selected topics covered in the course include: Energy conversion, generation and cogeneration, load duration curves, losses and efficiency optimization, theory and application of energy analysis techniques, energy audit: definition and types, data analysis, reporting and recommendation. Prerequisite: EECE210, Senior standing.

EECE 680/480 Antennas for Wireless Communications 3 cr.
This course provides students with an understanding of basic principles of antenna analysis and design for wireless communications. The course covers an overview of the fundamental characteristics and parameters of antennas, an overview of analytical methods used to analyze and design antennas with application to some basic antenna structures such as linear antennas, loop antennas, antenna arrays and microstrip antennas. Prerequisite: EECE 380.

EECE 681 Advanced Antenna Design 3 cr.
This course provides students with an understanding of advanced antenna structures and presents an overview of analytical and numerical methods used to analyze and design these antenna structures. The course includes broadband antennas, frequency-independent antennas, aperture antennas, horn antennas, microstrip antennas and reflector antennas. Students will work on a research paper on a selected antenna design topic. Prerequisite: EECE 680.

EECE 682 Time-Harmonic Electromagnetic Fields 3 cr.
A course on time-varying and time-harmonic EM fields; electrical properties of matter; wave propagation and polarization; construction of solutions; reflection and transmission; electromagnetic theorems and principles in particular equivalence; rectangular waveguides and cavities; dielectric waveguide, circular waveguides, spherical waveguide; radiation from structures; scattering by wedges, cylinders and spheres; radiation from apertures, and perturbational and variational techniques. Prerequisite: EECE 380.

EECE 683 Numerical Methods in Electromagnetics 3 cr.
This course examines the principles and applications of numerical techniques for solving practical electromagnetics problems. It covers the moment methods, finite difference methods, finite element methods and hybrid methods. The course also investigates application of the finite-volume control method in electromagnetics. Prerequisite: EECE 682.

EECE 684/484 Microwave Engineering 3 cr.
This course focuses on the analysis and design of passive microwave circuits. It covers the fundamentals for radio frequency and microwave engineering. It discusses the theories of transmission lines, waveguides, impedance matching, microwave networks, scattering parameters, power dividers, directional couplers, microwave resonators and microwave filters. The course enables students to study and analyze their own microwave network using computer-aided design tools and measurement equipment. Prerequisite: EECE 380.

EECE 685/485 Radio Frequency (RF) Circuits Design 3 cr.
This course covers advanced RF circuit design principles and techniques, beginning with the behavior of passive components like high-frequency resistors, capacitors, and inductors. Students learn to design RF circuits using transmission line theory and the Smith Chart, then delve into the study of two-port networks and their representations in terms of S-parameters. The course emphasizes impedance matching, biasing, and RF transistor modeling. Various RF amplifier configurations such as low noise, high power, and broadband amplifiers are explored along with their applications. Nonlinear systems in RF oscillator and mixer circuits are discussed, as are RF switches and phase shifters. Throughout the course, students use computer-aided design tools for simulation and analysis, gaining practical skills in RF circuit design. Prerequisites: EECE 310 and EECE 380.

EECE 686/486 Radio-Frequency (RF) Transceiver Design 3 cr.
This course targets the physical layer of a communication system by focusing on the interactions between the various transceiver blocks. The course addresses the design and operation of the components that reside between the signal processing unit and the antenna within the RF chain. The course also details the functional level modeling of different transceiver architectures by accounting for the gain, noise, nonlinearity, sensitivity and dynamic range. In addition, students are exposed to recent computer-aided simulation tools and measurement techniques through a set of laboratory experiments that are tailored based on the course content. As a result, the course equips the students with theoretical and practical experience in RF transceiver design. Prerequisites: EECE 311 and EECE 380.

EECE 687/487 Radio-Frequency Integrated Circuit (RFIC) Design 3 cr.
The course addresses the analysis and design of passive and active Radio Frequency Integrated Circuits (RFICs). The course introduces the design of on-chip lumped elements and passive RF components. In addition, it includes the design of various RF blocks such as low noise amplifiers, power amplifiers, oscillators, mixers, phase locked loops, frequency synthesizers, and switches. The course provides students with hands-on experience in the simulation of RFICs as well as the different calibration and de-embedding techniques for on-wafer measurements. As a result, the students will be equipped with essential theoretical and practical experience in RFIC design. Prerequisites: EECE 380 and EECE 311.

EECE 688/488 Engineering Bio-Electromagnetics 3 cr.
This course discusses the interaction between biological material and electromagnetic fields. The course introduces Bio-Electromagnetics along with its sub-divisions and reviews the fundamental properties of electromagnetic fields and their propagation characteristics in lossy biological tissues. The course then elaborates on the electromagnetic properties of biological tissues from a bioelectric perspective. Bio- Electromagnetism is then analyzed at DC, extremely

low frequencies, radio frequencies, up to Terahertz frequencies and beyond. The concept of Dosimetry and the principles of energy absorption in biological tissues are then studied along the design of electromagnetic sensors and electrodes for monitoring, reception and stimulation in the human body. The human body is then analyzed as a communication channel and as a generator of electromagnetic fields. The course is concluded with an introduction to the various electromagnetic simulation tools and the corresponding measurement techniques. Prerequisites: EECE 380 and EECE 340.

EECE 690/490 Introduction to Machine Learning 3 cr.
The course provides an overview of machine learning theory and algorithms that learn from experience to predict or control yet to be seen instances. The course discusses the intuition and the theory of some selected modern machine learning concepts as well as practical know-how to successfully apply them to new problems. It covers topics in supervised learning such as parametric/ non-parametric, generative/ discriminative algorithms for classification and regression and in unsupervised learning for clustering, dimensionality reduction and reinforcement learning. The course also includes case studies and applications so that students can gain practice on regularization, model selection, parameter estimation, Bayesian networks, hidden Markov models, support vector machines, reinforcement learning, neural networks and deep learning. Students cannot receive credit for both EECE 690 and EECE 633 and 667. Prerequisites: EECE 330, MATH 218 or MATH 219, and STAT 230 or STAT 233.

EECE 691/491 Digital Signal Processing 3 cr.
Course topics include a review of signals, systems, sampling and transforms; Euler, Tustin (bilinear), and Al-Alaoui s-to-z transforms; design of digital filters: FIR and IIR; multi-rate signal processing with applications; effects of finite word length; discrete random signals and stochastic spectral estimation; introduction to fractional order systems; introduction to adaptive filtering; introduction to multi-dimensional signal and image processing; current topics of interest. Prerequisite: Senior standing.

EECE 691L Digital Signal Processing Lab 1 cr.
This graduate lab is comprised of a set of lab experiments in MATLAB, C and Assembly covering a series of real-time signal processing topics. The developed laboratory material is intended to complement the digital signal processing course (EECE 691). Upon completion of the lab, students will have acquired the required knowledge and skills to develop real-time DSP systems. Prerequisites: EECE 491 or EECE 691.

EECE 692/MECH 642 Computer Vision 3 cr.
An introductory course on the problems and solutions of modern computer vision. Topics covered include image acquisition, sampling and quantization; image segmentation; geometric framework for vision: single view and two-views; camera calibration; stereopsis; motion and optical flow; recognition; pose estimation in perspective images. Prerequisite: Senior standing.

EECE 693 Neural Networks 3 cr.
The course provides a comprehensive foundation to artificial neural networks and machine learning with applications to pattern recognition and data mining; learning processes: supervised and unsupervised, deterministic and statistical; clustering; single layer and multilayer perceptrons; least-mean-square, back propagation, deep learning; Al-Alaoui pattern recognition algorithms; radial basis function networks; committee machines; principal component analysis; self-organizing maps; current topics of interest. Prerequisite: Senior standing.

EECE 694 Digital Image Processing 3 cr.
Introduction to multi-dimensional signal processing; digital image fundamentals; image formation and perception; image representation, coding and filtering; image enhancement in the spatial and frequency domains; image restoration; color image processing; wavelet and multi-resolution processing; image compression; morphological image processing; image segmentation; feature extraction and scene analysis; representation and description; object recognition; introduction to computer graphics and computer vision; current topics of interest. Prerequisite: Senior standing.

EECE 694L Image Processing Lab 1 cr.
The EECE 694L graduate lab comprises a set of MATLAB/C++ based lab experiments in different image processing topics covering image pre and post processing techniques, image compression, morphological transformations, image restoration and enhancement techniques, color image processing, computer vision basics, and geographical image processing. In addition, students will be exposed to software optimizations for real time image processing using SIMD instructions. Prerequisite: EECE 694 or EECE 603.

EECE 695 Adaptive Filtering 3 cr.
A course that examines the fundamentals of optimal filtering and estimation, Wiener filters, linear prediction, steepest-descent and stochastic gradient algorithms; frequency-domain adaptive filters; method of least squares, recursive least squares, fast fixed order and order-recursive (lattice) filters; mis adjustment, convergence and tracking analyses, stability issues, finite precision effects; connections with Kalman filtering; and nonlinear adaptive filters. Prerequisite: Senior standing.

EECE 696 Applied Parallel Programming 3 cr.
This course is an introduction to parallel programming and GPU computing. Topics include: GPU as part of the PC architecture; CUDA, CUDA threads and CUDA memory; floating point performance; Open CL; MPI; and reductions and their implementation. The course also includes application case studies, current topics and a course project. Prerequisites: EECE 321, and senior standing.

EECE 697/MECH 646 Wheeled Mobile Robotics 3 cr.
A course that provides in-depth coverage of wheeled mobile robots. The material covers: non holonomy and integrability of kinematic constraints. Modeling: kinematics, dynamics and state-space representation. Nonlinear control strategies (open-loop and closed –loop). Five case studies are covered throughout the course: car-like, cart- like, omni- directional wheeled, mobile wheeled pendulums and bike-like robots. Prerequisite: Senior standing.

EECE 698/MECH 650 Autonomous Mobile Robotics 2 cr.
This course is designed to provide engineering graduates and 4th year students with the opportunity to learn about autonomous mobile robotics. Topics include sensor modeling, vehicle state estimation, map-based localization, linear and nonlinear control, and simultaneous localization and mapping. Prerequisites: EECE 230, EECE 312 and Pre- or corequisite MECH 436; or Prerequisites: EECE 230 and Pre- or corequisite EECE 460.

EECE 699 Topics in Artificial Intelligence 3 cr.
This course focuses on some selected topics in AI related to agent and multi-agent systems, life-long learning and artificial life. Specifically, this course covers both theoretical and technical issues in reinforcement learning, transfer learning, evolutionary approaches, quantum genetic algorithms and explainable AI. The course also has a practical project for students to explore learned concepts from a contemporary lens. Prerequisite: Senior Standing.

Department of Industrial Engineering and Management (IEM)

Chairperson:	Maddah, Bacel
Professors:	Maddah, Bacel; Salameh, Moueen
Associate Professors:	Tarhini, Hussein
Assistant Professors:	Nouiehed, Maher; Abou Ibrahim, Hisham; Zahed, Karim; Nehme, Nabil (visiting); Olleik, Majd
Senior Lecturers:	Abillama, Walid; Noueihed, Nazim; Saad, Youssef; Trabulsi, Samir
Lecturers:	Abboud, Jacques; Bdeir, Fadl; Hamade, Tarek; Kalach, Mayssa; Khraibani, Rayan; Youness, Hasan
Instructors:	Basmadjian, Garo; Gharios, Nadim; Hosn, Majd; Jaafar, Maysaa; Kadi, Samir; Karam, Mario; Mattar, Maurice; Sfeir, Rana

The Department of Industrial Engineering and Management offers an undergraduate degree program leading to a Bachelor of Engineering in Industrial Engineering and a minor in Engineering Management.

Bachelor of Engineering (BE)

Major: Industrial Engineering (IE)

The Industrial Engineering Program extends over a four-year period and is offered exclusively on a daytime, on-campus basis. The program is offered in eleven terms whereby eight terms are 16-week Fall/Spring terms given over four years, and three terms are eight-week summer terms taken during the first three years of the program. In the summer term of the third year (Term IX), students are required to participate in a practical training program with a local, regional or international organization. The entire program is equivalent to five academic years but is completed in four calendar years with three summer terms.

Program Mission

The mission of the Industrial Engineering program is to graduate students who assume leadership positions in the industrial engineering profession and excel in graduate education. Our graduates are sought to be lifelong learners that contribute to the wellbeing of Lebanon and the region.

Program Educational Objectives

Graduates of the IE program will be able to:

- assume key roles in a range of industries that use industrial engineering, including manufacturing and service.
- effectively participate in, coordinate and manage diverse teams of engineers and analysts, especially in large-scale systems.
- pursue advanced degrees in industrial engineering and other related fields at reputable regional and international universities.
- appreciate the importance of professional ethics and actively use their knowledge and experience to the benefit of the community.

IE Program Learning Outcomes

Upon graduation, IE students will be able to demonstrate:

- an ability to apply knowledge of mathematics, science and engineering to model, optimize and evaluate integrated systems of people, technology and information.
- an ability to design and conduct experiments, as well as to analyze and interpret data.
- an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
- an ability to function on multidisciplinary engineering teams.
- an ability to identify, formulate and solve engineering problems and to develop integrated solutions to large-scale, sociotechnical problems through quantitative models.
- an understanding of professional and ethical responsibility.
- an ability to communicate effectively in oral and written form.
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- recognition of the need for, and ability to engage in, lifelong learning.
- knowledge of contemporary issues.
- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Program Requirements

The BE curriculum in Industrial Engineering is a four-year program (with three summers) consisting of 143 credit hours of coursework.

The IE curriculum is supported by four pillars:

a) basic science courses, b) general education courses, c) basic business courses and d) general engineering fundamental courses.

The specific course requirements are as follows:

- Basic Science Courses: MATH 201, MATH 202, MATH 218/219, MATH 251, STAT 230, PHYS 210, PHYS 210L, CHEM 201/202, CHEM 203, BIOL 210
- General Education Requirements: 9 credits in Cultures and Histories (including one History of Ideas), 3 credits in Human Values, 6 credits in Societies and Individuals, 6 credits in Understanding Communication - English: ENGL 203 and ENGL 206, and 3 credits in Understanding Communication - Arabic. Students must also take a course in Community-Engaged Learning. One elective should cover the theme of Social Inequalities
- Basic Business Courses: MNGT 215, ACCT 210, MKTG 210
- Engineering Fundamentals: CIVE 210, MECH 220, MECH 230, EECE 210, EECE 230, MECH 421

The IE courses are distributed in three core areas:

a) Operations Research, b) Engineering Management and c) Production Systems.

Curriculum

Term I (Fall)		**Credits**
FEAA 200	Introduction to Engineering and Architecture	3
INDE 301	Engineering Economy	3
MATH 218/219	Linear Algebra	3
MATH 201	Calculus and Analytic Geometry III	3
CIVE 210	Statics	3
		Total 15
Term II (Spring)		**Credits**
EECE 210	Electric Circuits	3

EECE 230	Introduction to Programming	3
MATH 202	Differential Equations	3
BIOL 210	Human Biology	3
ENGL 203	Academic English (Understanding Communication)	3
MECH 220	Engineering Graphics	1
		Total 16
Term III (Summer)		**Credits**
CHEM 201/202	Chemistry Course	3
ENGL 206	Technical English (Understanding Communication)	3
ECON 211	Microeconomic Theory (Societies and Individuals)	3
		Total 9
Term IV (Fall)		**Credits**
INDE 302	Operations Research I	3
INDE 411	Introduction to Project Management	3
STAT 230	Introduction to Probability and Random Variables	3
PHYS 210	Introductory Physics II	3
PHYS 210L	Introductory Physics LAB II	1
ARAB XXX	Arabic Elective (Understanding Communication)	3
		Total 16
Term V (Spring)		**Credits**
INDE 303	Operations Research II	3
INDE 320	Work Measurement and Methods Engineering	3
INDE 430	Statistical Quality Control	3
MECH 230	Dynamics	3
	Cultures and Histories Elective I	3
		Total 15
Term VI (Summer)		**Credits**
MKTG 210	Principles of Marketing	3
MATH 251	Numerical Computing	3
	Societies and Individuals Elective	3
		Total 9

Term VII (Fall)		**Credits**
INDE 410	Engineering Ethics (Human Values)	3
INDE 412	Engineering Entrepreneurship	3
INDE 421	Human Factors Engineering	3
INDE 504	Discrete Event Simulation	4
MNGT 215	Fundamentals of Management and Organizational Behavior	3
		Total 16
Term VIII (Spring)		**Credits**
INDE 402	Facilities Planning and Material Handling	3
INDE 431	Production Planning and Inventory Control	3
INDE 535	Data Analytics for Operations Research and Financial Engineering	3
MECH 421	Manufacturing Processes I	3
ACCT 210	Financial Accounting	3
		Total 15
Term IX (Summer)		**Credits**
INDE 500	Approved Experience	0
Term X (Fall)		**Credits**
INDE 501	Final Year Project I	3
INDE 513	Information Systems	3
CHEM 203	Chemistry Lab	2
	Technical Elective I	3
	Cultures and Histories Elective II	3
	Community Engaged Learning	3
		Total 17
Term XI (Spring)		**Credits**
INDE 502	Final Year Project II	3
	Technical Elective II	3
	Technical Elective III	3
	Technical Elective IV	3
	Cultures and Histories Elective III	3
		Total 15
		Total Credit Hours 143

The 12-credit technical electives requirement should consist of (i) 6-9 credits from the graduate courses offered by the IEM Department, (ii) 0-3 credits from outside the IEM Department and (iii) 3 credits from sciences.

Minor in Engineering Management

The Department of Industrial Engineering and Management offers a minor in Engineering Management that can be pursued by undergraduate Engineering and Architecture students, as well as by students from related majors, starting as early as the fall term of their third year of enrollment. Only students who have a cumulative GPA of 2.3 or more are eligible to apply for the minor. To satisfy the requirements of this minor, a student (GPA: 2.3 or more) must earn 18 credits of coursework from the IEM Department course offerings as follows:

- 9 credits from the undergraduate (Industrial Engineering) courses offered by the IEM Department, which must include INDE 301 Engineering Economy.
- 9 credits from either the undergraduate or the graduate (Engineering Management) courses offered by the IEM Department.
- A minimum grade of C+ is required for a course to be counted toward the fulfillment of a minor in Engineering Management. Additionally, a cumulative average of B (GPA 3.0) or above in all minor courses is required.

Course Description

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It is interdisciplinary in nature bringing ideas and solutions from all disciplines in engineering and architecture. Annually.

INDE 301 Engineering Economy 3 cr.
A course that covers principles, basic concepts and methodology for making rational decisions in the design and implementation of real engineering projects; time value of money, depreciation, comparing alternatives, effect of taxes, inflation, capital financing and allocation, and decision under uncertainty. Every term. Formerly ENMG 400.

INDE 302 Operations Research I 3 cr.
A course on operation research modeling concepts with an emphasis on linear programming; topics include: linear programming, network programming and project management. Prerequisite: MATH 218 or Math 219, or equivalent. Annually. Formerly ENMG 500.

INDE 303 Operations Research II 3 cr.
Another course on operation research modeling concepts with an emphasis on probability models and stochastic processes; topics include conditional probability, discrete- and continuous-time Markov chains and their application in modeling queues, inventories and production process behavior. Prerequisite: STAT 230 or equivalent. Formerly ENMG 501. Annually.

INDE 320 Work Measurement and Methods Engineering 3 cr.
A course on system and work design concepts; time studies; performance rating and allowances; standard and pre-determined times; work methods improvement; design of manual work, equipment, tools and work environments; line balancing; manpower determinations, job analysis and incentives; systems analysis, lean and value analysis. Prerequisite: STAT 230 or equivalent. Annually.

INDE 402 Facility Planning and Material Handling 3 cr.
Inter-relationships between facilities, process design, systematic layout procedures, computer aided layout, location analysis models, material handling analysis and concepts, warehousing storage and retrieval systems. Prerequisites: INDE 302 and INDE 303. Annually.

INDE 410 Engineering Ethics 3 cr.
A course on engineering ethics covering responsibility in engineering; framing the moral problem; organizing principles of ethical theories; computers, individual morality and social policy; honesty, integrity and reliability; safety, risk and liability in engineering; engineers as employees; engineers and the environment; international engineering professionalism; and future challenges. Formerly ENMG 504. Every term.

INDE 411 Introduction to Project Management 3 cr.
Introduction to project management for engineers. Conception, planning, scheduling, budgeting, leadership, management, tracking and completion of projects. Project management software is introduced and used. Annually.

INDE 412 Engineering Entrepreneurship 3 cr.
This course provides students with the tools necessary to create and grow a successful, innovative technology enterprise. Topics include evaluating market opportunities, designing profitable business models, producing a solid business plan, raising capital, addressing legal considerations and developing a winning team. Prerequisite: INDE 301 or equivalent. Every term. Formerly ENMG 505.

INDE 421 Human Factors Engineering 3 cr.
Designing for human performance effectiveness and productivity. Introducing human factors and ergonomics; Design and evaluation methods; Perception: vision and hearing; Cognition; Displays and controls; Work-space design; Biomechanics of work; Stress and workload; Safety and human error; Human-computer interaction. Prerequisite: INDE 320. Formerly ENMG 614. Annually.

INDE 430 Statistical Quality Control 3 cr.
Design of quality control systems; quality methods for establishing product specifications; process control; variables and attributes charts; acceptance sampling; operating characteristics curves; process capabilities; QC software. Prerequisite: STAT 230. Annually.

INDE 431 Production Planning and Inventory Control 3 cr.
Methods of production and inventory planning. Single-product replenishment systems. Inventory management for special classes of items and products. Multiple item and multiple location inventories. Production planning and scheduling: aggregate production planning, MRP, JIT, OPT and short-range production scheduling. Prerequisites: INDE 302 and 303. Annually.

INDE 500 Approved Experience 0 cr.
Practical training program with a local, regional or international organization.

INDE 501 Final Year Project I 3 cr.
This is a capstone course where IE students utilize knowledge they acquired from different courses to design and develop an IE-related product or service. This is the first part of the course that spans through the final year of the student's study. Prerequisite: Completion of third year in IE requirements. Fall. Annually.

INDE 502 Final Year Project II 3 cr.
This is the second part of the IE capstone course. Prerequisite: INDE 501. Spring.

INDE 504 Discrete Event Simulation 4 cr.
System definition; model formulation, Monte-Carlo method; random number generation; discrete events; system entities and its attributes. Emphasis on analysis of systems and models of real-life problems. Lab experience with a modern discrete-event simulation package (e.g., ARENA). Prerequisite: INDE 303. Annually.

INDE 513 Information System 3 cr.
This is a course that answers the questions: What is information? How can it best be stored? What to call it? The course also covers the following topics: abstraction, interfaces, barriers, specification, documentation, relational calculus and architectural abstractions, data structures for fast data storage and retrieval, encryption, putting things on the Web, data warehousing and data mining. Annually. Formerly ENMG 652.

INDE 533 Industrial Automation 3 cr.
A course that introduces students to the field of industrial automation and control. The course covers a wide range of topic covering areas of instrumentation, basic control, electrical actuators and motors, pneumatics, hydraulics, basic mechanical systems and industrial controllers. The course also introduces concepts on numeric control NC and industrial robots, in addition to brief introduction on factory business and lean manufacturing as related to automation. The course consists of a lecture component (2 cr.) and a laboratory component (1 cr.).

INDE 534 Manufacturing Systems Analysis 3 cr.
Introduction which brings together useful models and modeling approaches that address a wide variety of manufacturing system design and operation issues: assembly line, transfer lines, job shops, flexible manufacturing systems and group technology. Prerequisites: INDE 431 and INDE 402. Formerly ENMG 613. Annually.

INDE 535 Data Analytics for Operations Research and Financial Engineering 3 cr.
Students will learn to identify, evaluate and capture analytic opportunities that create value for an organization. Basic descriptive analytics methods are reviewed utilizing specialized software (e.g. R) in analyzing large data sets. Predictive analytics techniques including clustering, classification and regression are covered in detail. Prescriptive analytics applications on utilization simulation and optimization over large data to improve business decisions are presented. Annually.

Department of Mechanical Engineering

Chairperson:	Lakkis, Issam
Professors:	Asmar, Daniel Ghaddar, Nesreen; Lakkis, Issam, Moukalled, Fadl; Shihadeh, Alan
Professor Emeritus:	Sakkal, Fateh
Associate Professors:	Mustapha, Samir; Oweis, Ghanem; Shammas, Elie
Assistant Professors:	Abou Jaoude, Dany; Harb, Mohammad; Honein, Theresa; Kaddouh, Bilal
Assistant Research Professor:	Talih, Soha
Instructors:	Al Saidi, Abdul-Kader; Balhas, Zainab; Fayad, Rami; Kassis, Lina; Kfoury, Elie

The Department of Mechanical Engineering offers one undergraduate degree program that leads to a Bachelor of Engineering with a major in Mechanical Engineering (BE in ME) and a minor in Applied Energy.

Bachelor of Engineering (BE)

Major: Mechanical Engineering

The Mechanical Engineering Program extends over a four-year period and is offered exclusively on a daytime, on-campus basis. The program is offered in 11 terms whereby eight terms are 16-week Fall/Spring terms given over four years, and three terms are eight-week summer terms taken during the first three years of the program. In the summer term of the third year (Term IX), students are required to participate in a practical training program with a local, regional or international organization. The entire program is equivalent to five academic years but is completed in four calendar years with three summer terms.

The undergraduate program also provides students with options to pursue minors in the following:

- Applied Energy Minor
- Other minors offered by the Maroun Semaan Faculty of Engineering and Architecture, Faculty of Arts and Sciences and the Suliman S. Olayan School of Business

Program Mission

The Mechanical Engineering faculty has agreed that the undergraduate program mission is as follows:

The undergraduate program in Mechanical Engineering seeks to empower students to pursue successful careers and to create a learning environment in which they can develop their creative and critical thinking skills, grow into lifelong learners in light of ever-increasing challenges of modern technology, and commit to the ethical and professional responsibilities required in their calling at the global level while focusing on the needs of Lebanon and the region.

Program Educational Objectives

The program is based on the following educational objectives that were approved by the Mechanical Engineering faculty members on May 27, 2010:

Our graduates will be able to advance successfully in their careers as reflected in continued employment, job satisfaction, leadership responsibilities and professional recognition.

Our graduates will be able to succeed in graduate studies as reflected in admission to highly ranked programs, timely completion of degree requirements and recognition by competitive fellowships and other awards.

Program Requirements

The undergraduate curriculum for the degree of Bachelor of Engineering (BE), major: Mechanical Engineering is a five-year program. It consists of 173 term credit hours of coursework of which 30 credits are completed in the freshman year while the student is enrolled in the Faculty of Arts and Sciences and 143 credits are completed in four years while the student is enrolled in the Maroun Semaan Faculty of Engineering and Architecture. Students admitted at the sophomore level will be required to complete 143 credits in four years to earn the degree as outlined here:

- **General Engineering:** FEAA 200, CIVE 210, EECE 210, EECE 230, EECE 312, EECE 312L, INDE 301
- **Mathematics:** MATH 201, MATH 202, MATH 212, MATH 218, MATH 251, STAT 230
- **Sciences:** PHYS 211, PHYS 211L, CHEM 202, and one biology elective (BIOL 201 level or above, except BIOL 209)
- **General Education:** Arabic course, ENGL 203 and ENGL 206, two social sciences courses, three humanities courses and a course on ethics approved for the GE program

- **ME Core Courses:** MECH 201, MECH 230, MECH 310, MECH 314, MECH 320, MECH 332, MECH 340, MECH 341, MECH 410L, MECH 412, MECH 414, MECH 420, MECH 421, MECH 430, MECH 432, MECH 436, MECH 510 and MECH 525

- **Technical Electives:** Five courses with at least three from the selected ME track. One elective can be from outside the major and one free elective (such as engineering, math, economics, business or science). To complete the new GE requirements, a student may opt to take his free elective as HEHI 201 (Foundations of Humanitarian Engineering and Public Health Innovations); or complete an UG research (MECH 499) related to the topic (by approved petition); or do an FYP project related to humanitarian Engineering (by approved petition).

- **Approved Experience:** MECH 500

- **Final Year Project:** MECH 501 and MECH 502

Curriculum

Term I (Fall)		**Credits**
MATH 201	Calculus and Analytic Geometry III	3
FEAA 200	Introduction to Engineering and Architecture	3
EECE 230	Intro to Computation and Programming	3
CIVE 210	Statics	3
PHYS 211	Electricity and Magnetism	3
PHYS 211L	Electricity and Magnetism Laboratory	1
		Total 16
Term II (Spring)		**Credits**
EECE 210	Electric Circuits	3
MECH 201	Computer Aided Drawing and Design (CADD)	3
MATH 202	Differential Equations	3
MECH 230	Dynamics	3
ENGL 203	Academic English	3
		Total 15
Term III (Summer)		**Credits**
STAT 230	Introduction to Probability and Random Variables	3
CHEM 202	Introduction to Environmental Chemistry	3
ENGL 206	Technical English	3
		Total 9

Term IV (Fall)		**Credits**
EECE 312	Electronics	3
EECE 312L	Circuits and Electronics Lab	1
MATH 212	Introductory Partial Differential Equations	3
MECH 310	Thermodynamics I	3
MECH 340	Engineering Materials	3
Cultures and Histories (History of Ideas)		3
		Total 16

Term V (Spring)		**Credits**
MATH 218	Elementary Linear Algebra with Applications	3
MECH 314	Introduction to Fluid Engineering	3
MECH 320	Mechanics of Materials	3
MECH 332	Mechanics of Machines	3
MECH 341	Materials Lab	1
MECH 430	Process Instrumentation and Measurements	3
		Total 16

Term VI (Summer)		**Credits**
MECH 432	Dynamics System Analysis	2
Biology Elective		3
Arabic Elective		3
		Total 8

Term VII (Fall)		**Credits**
MATH 251	Numerical Computing	3
MECH 410L	Thermal Fluid Laboratory	1
MECH 414	Thermodynamics II	3
MECH 420	Mechanical Design I	3
MECH 421	Manufacturing Processes I	3
Societies and Individuals Elective		3
		Total 16

Term VIII (Spring)		**Credits**
INDE 301	Engineering Economy	3
MECH 412	Heat Transfer	3
MECH 436	Control Systems	3
MECH 525	Product Design and Development	3
Societies and Individuals Elective		3
		Total 15
Term IX (Summer)		**Credits**
MECH 500	Approved Experience	0cr / 1 billing
		Total 0

Term X (Fall)		**Credits**
MECH 501	Final Year Project I	1
MECH 510	Design of Thermal Systems	3
Approved Human Values Course		3
Technical Elective I		3
Technical Elective II		3
Cultures and Histories Elective		3
		Total 16
Term XI (Spring)		**Credits**
MECH 502	Final Year Project II	4
Technical Elective III		3
Technical Elective IV		3
Technical Elective V		3
Cultures and Histories Elective		3
		Total 16

List of Pre-Approved Technical Electives

- **Engineering Electives:** BMEN: 600, 602, 604, 605, 606, 609, 610, 611. CHEN: 531, 611, 614, 615, 619, 672, 673, 675, 798A. CIVE: 421, 451, 460, 552, 555, 602, 603, 610, 648, 655, 658, 659, 670. FEAA: 502. INDE: 412, 513, 533.

- **Science Electives: BIOL:** 201, 202, 210, 223, 244, 246, 250, 260, 268. CHEM: 206, 208, 211, 212, 217, 218, 228, 233, 234. MATH: 210, 219, 223, 224, 225, 227, 233, 241, 261, 271,

303, 304, 305, 306, 314, 341, 350, 351, 358. PHYS: 216, 217, 220, 222, 223, 225, 226, 228, 235, 236, 237, 249, 301, 302, 303, 305, 306, 307.

- **Other Electives: CMPS:** 257, 272, 274, 277, 281, 285, 286, 287, 288, 350, 368, 372, 373. DCSN: 200, 210. ECON: 214, 215, 217, 218, 222, 223, 226, 227, 228, 230, 232, 235, 236, 237, 239, 240, 241, 242, 243. ENMT: 225, 235. GEOL: 202, 205, 211, 226, 227. ENST: 320, 396. MNGT: 215, 218, 220, 226, 229, 230. STAT: Any course with a number equal to or greater than 234.

Mechanical Engineering Optional Tracks

The core courses in the Mechanical Engineering Program are offered in the following track areas:

- Thermal and Fluid Engineering
- Mechatronics
- Design, Materials and Manufacturing

The student may opt for any track (Thermal and Fluid Engineering; Mechatronics; or Design, Materials and Manufacturing) by taking at least three technical electives in the selected track. Normally one technical elective is allowed from outside the mechanical engineering major.

The ME focus area in Control and Robotics provides a coherent academic framework between the ECE and ME departments in the areas of control, instrumentation and robotics. This track is open to all undergraduate ME and ECE students.

Track I: Thermal and Fluid Engineering		**Credits**
MECH 310	Thermodynamics I	3
MECH 314/ CHEN 311	Introduction to Fluids Engineering	3
MECH 414	Thermodynamics II	3
MECH 410L	Thermal/Fluid Systems Laboratory	1
MECH 412	Heat Transfer	3
MECH 501	Final Year Project I	1
MECH 502	Final Year Project II	4
MECH 510	Design of Thermal Systems	3
Technical Elective Courses (at least three technical electives are selected)		**Credits**

MECH 511	Intermediate Fluid Mechanics	3
MECH 512	Internal Combustion Engines	3
MECH 513	Air Conditioning	3
MECH 514	Gas Turbines	3
MECH 515	Steam Turbines	3
MECH 516	Aerodynamics	3
MECH 603	Solar Energy	3
MECH 604	Refrigeration	3
MECH 606	Aerosol Dynamics	3
MECH 607	Micro Flows Fundamentals and Applications	3
MECH 609	Experimental Fluid Dynamics	3
MECH 663	Computational Fluid Dynamics	3
MECH 671	Renewable Energy Potential, Technology and Utilization in Buildings	3
MECH 672	Modeling Energy Systems	3
MECH 673	Energy Efficient Building with Good Indoor Air Quality	3
MECH 677	Heat Pumps	3
MECH 678	Solar Electricity	3
MECH 679	Energy Audit Lab	3
MECH 680	HVAC and Refrigeration Systems Lab	3
MECH 682	Principles of Integrative Building design, construction and operation for sustainability	3
MECH 683	Wind Turbines: Design and Applications	3
Track II: Design, Materials and Manufacturing		**Credits**
CIVE 210	Statics	3
MECH 201	Computer Aided Drawing and Design (CADD)	3
MECH 320	Mechanics of Materials	3
MECH 332	Mechanics of Machines	3
MECH 340	Engineering Materials	3
MECH 341L	Materials Lab	1
MECH 420	Mechanical Design I	3
MECH 421	Manufacturing Processes I	3
MECH 501	Final Year Project I	1

MECH 502	Final Year Project II	4
MECH 525	Product Design and Development	3
Technical Elective Courses (at least three technical electives are selected)		**Credits**
MECH 520	Mechanical Design II	3
MECH 521	Manufacturing Processes II	3
MECH 522	Mechanical CAD/CAE/CAM	3
MECH 540	Selection of Properties of Materials	3
MECH 550	Computer Applications in Mechanical Engineering	3
MECH 615	Continuum Mechanics	3
MECH 617	Smart Materials and Structures	3
MECH 622	Modeling of Machining Processes and Machines	3
MECH 624	Mechanics of Composite Materials	3
MECH 625	Fatigue of Materials	3
MECH 626	Metals and Their Properties	3
MECH 627	Polymers and Their Properties	3
MECH 628	Design of Mechanisms	3
MECH 630	Finite Element Methods in Mechanical Engineering	3
MECH 633	Biomechanics	3
MECH 634	Biomaterials and Medical Devices	3
MECH 638	Materials Selection and Design	3
Track III: Mechatronics		**Credits**
MECH 230	Dynamics	3
EECE 210	Electric Circuits	3
EECE 312	Electronics (for Mechanical Engineering students)	3
EECE 312L	Circuits and Electronics Lab	1
MECH 430	Instrumentation and Measurements	3
MECH 436	Control Systems	3
MECH 501	Final Year Project I	1
MECH 502	Final Year Project II	4
Technical Elective Courses (at least three technical electives are selected)		**Credits**
MECH 530	Mechatronics System Design	3
MECH 531	Mechanical Vibrations	3

MECH 628	Design of Mechanisms	3
MECH 631	Micro-Electro Mechanical Systems [MEMS]	3
MECH 634	Biomaterials and Medical Devices	3
MECH 641	Robotics	3
MECH 642	Computer Vision	3
MECH 643	Mechatronics and Intelligent Machines Eng. II	3
MECH 644	Modal Analysis	3
MECH 645	Noise and Vibration Control	3
MECH 648	Nonlinear Systems: Analysis, Stability and Control	3
MECH 653	Systems Analysis and Design	3
MECH 654	Adaptive Control	3
MECH 655	Optimal Control	3
MECH 656	System Identification	3
MECH 650	Autonomous Mobile Robotics	3

ME Focus Area in Control and Robotics

Students choosing to enroll in the Control and Robotics Focus (CRF) area should satisfy the following course requirements:

Two core courses and one laboratory in their respective departments (listed in the table below)

Core Courses Electronics		**Credits**
MECH 430	Process Instrumentation and Measurements	3
MECH 432	Dynamic System Analysis	2
MECH 436	Control Systems	3

Three elective courses from either department (ECE/ME) (listed in the tables below) provided they obtain the necessary prerequisites for any given course. At least one course from each of lists A (Control Theory) and B (Robotics) must be chosen, and one elective from either list A, B or C.

Technical Elective Courses (List A: Control)		**Credits**
MECH 648/ EECE 669	Nonlinear Systems: Analysis, Stability and Control	3
MECH 653/ EECE 660	System Analysis and Design	3

MECH 655/ EECE 662	Optimal Control	3
MECH 656/ EECE 663	System Identification	3
MECH 654/ EECE 665	Adaptive Control	3
MECH 657	Vehicle Dynamics and Control	3
Technical Elective Courses (List B: Robotics)		**Credits**
MECH 530/ EECE 530	Mechatronics	3
MECH 641/ EECE 661	Robotics	3
MECH 646/ EECE 697	Wheeled Mobile Robotics	3
MECH 650/ EECE 698	Autonomous Mobile Robotics	3
Technical Elective Courses (List C)		**Credits**
MECH 555/ EECE 463	Artificial Intelligence for Control Systems	3
MECH 642/ EECE 692	Computer Vision	3
MECH 647/ EECE 699	Hydraulic Servo Systems	3
MECH 691	Convex Optimization	3

Minor in Applied Energy

The minor in Applied Energy is open to all MSFEA students who are interested in the energy domain and in renewable energy applications. Students seeking professional careers that will focus on energy, the environment, sustainable applications in buildings and energy systems may find this minor attractive. The minor in applied energy is administered by the Department of Mechanical Engineering.

Students who have completed at least 60 credits at the sophomore level and higher and who have a cumulative GPA of 2.3 or more may apply by completing a minor application. The minor will be indicated on the transcript of the student who completes all the requirements described below. A minimum grade of C+ is required for a course to count toward the fulfillment of the minor.

Applied Energy Minor Program Structure

A student wishing to complete the minor is required to complete a minimum of 18 credits: 6 credits from the list of core courses and 12 credits from the list of elective courses.

The first are two core courses (6 credits) that provide a foundation for the understanding of energy science and technology and its economy.

The second component is a number of elective courses (12 credits), selected by the student in close consultation with her/his academic advisor for the applied energy minor.

Required Courses (6 credits)

- MECH 671 Renewable Energy Potential, Technology and Utilization in Buildings 3 cr., or EECE 675 Renewable Energy Systems 3 cr., or ENST 300 The Science and Technology of Energy 3 cr.

- ECON 333 Energy Economics and Policy 3 cr.

Elective Courses (Minimum of 12 credits)

CHEN 417	Reactor Engineering and Reactor Design	3 cr.
CHEN 470	Chemical Process Design	3 cr.
CHEN 471	Chemical Product Design	3 cr.
CHEN 541	Biochemical and Bioprocess Engineering	3 cr.
CHEN 570	Process Synthesis and Optimization	3 cr.
CHEN 612	Desalination	3 cr.
EECE 670	Power System Planning	3 cr.
EECE 671	Environmental Aspects of Energy Systems	3 cr.
EECE 672	Energy Planning and Policy	3 cr.
EECE 675	Renewable Energy Systems	3 cr.
ENST 320	Energy Laws and Case Studies	3 cr.
MECH 513	Air Conditioning	3 cr.
MECH 603	Solar Energy	3 cr.
MECH 631	Micro-Electro Mechanical Systems	3 cr.
MECH 670	Laboratory for Renewable Energy in Buildings	3 cr.
MECH 672	Modeling Energy Systems	3 cr.
MECH 673	Energy Efficient Building with Good Indoor Air Quality	3 cr.

MECH 676	Passive Building Design	3 cr.
MECH 677	Heat Pumps	3 cr.
MECH 678	Solar Electricity	3 cr.
MECH 679	Energy Audit Lab	3 cr.
MECH 681	Green Building Basics and LEED Practices	3 cr.
MECH 683	Wind Turbines: Design and Applications	3 cr.

Minor in Integrated Product Design

Integrated Product Design is an interdisciplinary minor, located at the intersection of design, engineering, business, art, humanities, and social sciences. The minor in integrated product design is open to all AUB students who are interested in expanding their knowledge of design and obtaining a deeper understanding of the design process of goods, systems, and services from research and conceptualization, to design development and prototyping, and to marketing and branding. It is a minor for students who are inspired to become social entrepreneurs to design and develop products that can be implemented and scaled to trigger positive systemic change. Through the minor, students are exposed to a range of design skills and methods, from visualization of ideas to creative problem-solving, and transformative design thinking. They also learn to work with multidisciplinary teams on hands-on projects and in a studio environment.

Students must earn 18 credits to satisfy the requirements for the minor in integrated product design. These are distributed as follows:

1. 6 credits of foundational design skills. Students must select 3 credits in basic design methods courses and 3 credits in visualization courses (see list 1).

2. 6 credits of core product design and development. Students must select 6 credits in product design courses (see list 2).

3. 6 credits of thematic field electives. Students must select 6 credits in two of the thematic areas A, B, C, and D (see list 3).

Students will follow AUB's regulations while pursuing the minor. University minimum requirements for a minor are as follows:

- *A minimum of 15 credit hours earned on the basis of regular graded courses (not tutorial or special project type courses) is required for a minor (refer to the requirements of each faculty/school).*

- *At least 9 credit hours of coursework must be completed at AUB.*

- *Each minor must have at least 6 credits exclusive to it, 9 credits may be common with the program requirements of the major field(s) of study.*

- *Minor courses may not be taken on a pass/fail basis at AUB.*

List 1: Foundational courses with a focus on basic design, visualization, and prototyping. The student should take 6 credits from this list.

ENMG 664	Introduction to Human-Centered Design	3 cr.
ARCH 100	Basic Design	6 cr.
MECH 201	Computer-Aided Drawing and Design (CADD)	3 cr.
MECH 421	Manufacturing Processes I Pre-requisites: MECH 320, MECH 340	3 cr.
MECH 522	Mechanical CAD/CAE/CAM Pre-requisites: MECH 320, MECH 420 and MECH 432	3 cr.
ARCH 111	Drawing I	3 cr.
ARCH 112	Drawing II Pre-requisite: ARCH 111	3 cr.
ARCH 313	Digital Tools Pre-requisite: ARCH 112	3 cr.
GRDS 111	Drawing	3 cr.
GRDS 141	Computer Graphics	3 cr.

List 2: Core courses with a focus on product design and development. The student should take 6 credits from this list.

MECH 525	Product Design and Development Pre-requisites: MECH 332, MECH 420	3 cr.
MECH 510	Design of Thermal Systems Pre-requisites: MECH 410L, MECH 412 and MATH 251	3 cr.
ARDS 400	Systems Thinking Pre-requisite: ENMG 698E	3 cr.
ENMG 663	Product Design and Development	3 cr.
BMEN 501	Bioengineering Design Fundamentals	3 cr.
CHEN 571	Chemical Product Design Pre-requisite: CHEM 470	3 cr.
GRDS 305	Graphic Design V Pre-requisite: GRDS 304	6 cr.
MECH 502, EECE 502, INDE 502, CHEN 502, CIVE 402	Approval of advisor	3 cr.

List 3: Field electives. The student must take 6 cr. From at least two categories (A-D)

Category A

INDE 412	Engineering Entrepreneurship	3 cr.
ARCH 068	Design Innovation and Entrepreneurship	3 cr.
ENMG 654	Technology-Based Entrepreneurship	3 cr.
ENMG 655	Management of Technology	3 cr.
ENMG 656	Management of Technological Innovations	3 cr.
MKTG 312	Consumer Behavior Pre-requisite: MKTG 306	3 cr.
MKTG 311	Applied Market Research	3 cr.
DCSN 310	Operations and Process Management	3 cr.
DCSN 340	Supply Chain Management Pre-requisite: DCSN 310	3 cr.
EMBA 521	Digital Marketing	3 cr.
ENTM 320	Social Entrepreneurship	3 cr.
ENTM 220	Entrepreneurship and Business Planning	3 cr.
INFO 220/ MKTG 220	Electronic Marketing Pre-requisites: MKTG 210, INFO 200	3 cr.
FINA 211	Introduction to Finance for Engineers Pre-requisite: ACCT 210	3 cr.
INFO 227/ MKTG 227	Social Media in Digital Management Pre-requisite: MKTG 210, Permission of the instructor for non-OSB students	3 cr.
ENTM 230	Decision-Making Skills for Entrepreneurs Pre-requisite: MNGT 215	3 cr.
MKTG 234	Marketing for Social Change Pre-requisite: MKTG 210 (or equivalent). Permission of instructor for non-OSB students	3 cr.
ENTM 270	Launching a New Venture Pre-requisite: MNGT 215, FINA 210	3 cr.

Category B

MECH 617	Smart materials and structures	3 cr.
MECH 631	Micro Electro Mechanical Systems (MEMS) Pre-requisite: MECH 430	3 cr.
MECH 632	Structural health monitoring Pre-requisites: MECH 320, MECH 430	3 cr.

MECH 798C	Sustainable Materials	3 cr.
MECH 634/ BMEN 608	Biomaterial and Medical Devices Pre-requisite: MECH 340 or consent of instructor	3 cr.
ARCH 040	"Making It": Models and Prototypes of Complex Structures	3 cr.
ARCH 060	Algorithm and Iteration	3 cr.
ARCH 063	Do It, Then Fix It As You Go	3 cr.
ARCH 069	New Territories	3 cr.
GRDS 040	3D Animation	3 cr.
GRDS 043	Advanced Digital Animation	3 cr.
EECE 625/425	Embedded and IOT Systems Pre-requisite: EECE 321	3 cr.
EECE 652	Web Server Design and Programming	3 cr.
EECE 680	Antennas for Wireless Communications Pre-requisite: EECE 380	3 cr.
EECE 684	Microwave Engineering	3 cr.
EECE 487/687	Radio-Frequency Integrated Circuit (RFIC) Design Pre-requisites: EECE 380, EECE 311	3 cr.
EECE 685	Radio Frequency (RF) Circuits Design Pre-requisites: ECE 311, EECE 340, EECE 380	3 cr.
EECE 686	Radio-Frequency (RF) Transceiver Design Pre-requisites: EECE 311, EECE 380	3 cr.
EECE 687/487	Radio-Frequency Integrated Circuit (RFIC) Design Pre-requisites: EECE 380, EECE 311	3 cr.
EECE 697/ MECH 646	Wheeled Mobile Robotics	3 cr.
EECE 698/ MECH 650	Autonomous Mobile Robotics Pre-requisites: EECE 230, EECE 312, and MECH 436; or EECE 230 and EECE 460	3 cr.
CHEN 619	Sustainability Science: Human and Environment Interaction	3 cr.

Category C

GRDS 062	Brand Inc.	3 cr.
MKTG 225	Strategic Brand Management Pre-requisites: MKTG 210. Students cannot receive credit for both SOAN 231 and MKTG 225 or both SOAN 235 and MKTG 225	3 cr.
MKTG 210	Principles of Marketing Co-requisite ENGL 204	3 cr.

Category D

GRDS 033	Pre-Brand: A History of Identity Design	3 cr.
GRDS 331	Introduction to Visual Theory	3 cr.

Course Descriptions

FEAA 200 Introduction to Engineering and Architecture 3 cr.
The course is designed to familiarize first year students with the different disciplines in Engineering and Architecture including: Architecture, Civil, Mechanical, Electrical, Chemical, Industrial and technologies used in the fields. The course takes a unique interdisciplinary approach to the field and introduces the related disciplines in the world of engineering and architecture. One key objective is to promote interdisciplinary interaction and innovative thinking. The course is organized into modules covering the different disciplines within the Maroun Semaan Faculty of Engineering and Architecture (MSFEA). The last module of the class showcases interdisciplinary projects demonstrating interactions among the different fields. The lectures explain as applicable to each discipline, through examples, notions of problem solving, design thinking, process of invention and innovation, environmental and civic responsibility, and measures of success in aesthetics and performance. The course project is a key component of the course. It is interdisciplinary in nature bringing ideas and solutions from all disciplines in engineering and architecture. Annually.

MECH 201 Computer Aided Drawing and Design (CADD) 3 cr.
The course aims to prepare Mechanical Engineering students to communicate through graphics, technical drawings and design databases via Computer Aided Drawing (CAD) software (such as AutoCAD®) and 3D Computer Aided Design software (such as Creo Parametric). Orthographic projection, auxiliary views, sectional views, dimensioning and tolerancing, drawing formats. Part geometric construction. Assemblies and exploded assemblies. Parts and assemblies working drawings. Engineering symbols. CADD project.

MECH 220 Engineering Graphics 1 cr.
The course aims at preparing the future engineer to understand and create technical drawings. The course seeks to develop effective utilization of computer-aided drafting (CAD) skills in order to create engineering drawings: orthogonal projection, exploded and auxiliary views, sectioning and sectional views, dimensioning and tolerance schemes, standard drawing formats and detailing. Introduction to the use of CAD packages (AutoCAD).

MECH 230 Dynamics 3 cr.
This is a basic course in engineering mechanics covering dynamics of particles and planar rigid bodies. This course introduces Newton's law of motion, the principle of work and energy, and the principle of impulse and momentum. Diagrammatic representations of the basic laws are applied on motion of particles, systems of particles and rigid bodies. Prerequisites: CIVE 210 and MATH 201.

MECH 310/CHEN 214 Thermodynamics I 3 cr.
This course seeks to provide a methodology by which students view objects in the physical universe as systems and apply to them the basic laws of conservation of mass, energy and entropy balance. The course covers the thermodynamic state and properties of a pure substance, energy and mass conservation, entropy and the second law. Applications involve closed setups and flow devices. Simple vapor and gas cycles applications.

MECH 314/CHEN 311 Introduction to Fluids Engineering 3 cr.
An introductory course on fluid behavior emphasizing conservation of mass, momentum, energy and dimensional analysis; study of fluid motion in terms of the velocity field, fluid acceleration, pressure field and viscous effects; applications of Bernoulli's equation, Navier-Stokes and modeling; flow in ducts, potential flows and boundary layer flows. Prerequisite: MECH 310.

MECH 320 Mechanics of Materials 3 cr.
A course that addresses the mechanical behavior of materials under different loadings such as axial, bending, transverse shear, torsion and combined loadings. Stress and strain transformation is discussed. Deflection of beams and buckling in columns are covered. Prerequisites: CIVE 210.

MECH 332 Mechanics of Machines 3 cr.
A course that deals with the mechanization of motion, kinematics analysis of linkage mechanisms, synthesis of cam-follower mechanisms, gear terminology and types of gears, analysis and synthesis of gear trains, force analysis and introduction to linkage synthesis. Prerequisite: MECH 230 and MECH 201.

MECH 340 Engineering Materials 3 cr.
The course introduces fundamental concepts in materials science as applied to engineering materials: crystalline structures; imperfections, dislocations and strengthening mechanisms; diffusion; phase diagrams and transformations; ferrous and non-ferrous metal alloys, ceramics and polymers; structure-property relationships; material selection case studies.

MECH 341 Materials Lab 1 cr.
The course seeks to accompany and compliment MECH 340 Engineering Materials. The laboratory sessions are designed to impart a qualitative and quantitative understanding of the mechanical properties of engineering materials. The laboratory sessions will also examine topics related to the microstructure of materials. Corequisite: MECH 340.

MECH 410L Thermal/Fluid Systems Laboratory 1 cr.
A series of experiments on basic thermodynamic cycles, psychrometry, combustion and elementary fluid mechanics, with special emphasis on the use of the computer as a laboratory tool for data acquisition, reduction, analysis and report preparation. Prerequisite: MECH 310 and MECH 314.

MECH 412 Heat Transfer 3 cr.
The course seeks to impart an understanding of the fundamental concepts and laws of conduction, convection and radiation heat transfer and their application to the solution of engineering thermal problems. The course covers steady and transient heat conduction; extended surfaces; numerical simulations of conduction in one and two- dimensional problems; external and internal forced convection of laminar and turbulent flows; natural convection; heat exchanger principles; and thermal radiation, view factors and radiation exchange between diffuse and gray surfaces. The use of Matlab is integrated into homework assignments. Prerequisite: MECH 314.

MECH 414 Thermodynamics II 3 cr.
A course investigating the availability and work potential of systems; irreversibility; second law efficiency; availability; gas mixtures; air-conditioning; chemical reactions; high speed flow, nozzles and diffusers; environmental, economic and social implications. Prerequisite: MECH 310.

MECH 420 Mechanical Design I 3 cr.
This is an introductory course in machine design in which one learns how to determine the structural integrity of common machine components and to apply this knowledge within the context of machine design problems. Mechanical elements such as shafts, bearings, springs, welding joints and fasteners are studied with emphasis on their behavior under both static and fatigue loading. Prerequisites: MECH 320 and MECH 340.

MECH 421 Manufacturing Processes I 3 cr.
A course covering traditional material removal processes (machining and abrasion), CNC machining, as well as non-traditional material removal processes (EDM, ECM, thermal cutting, etc.); the science behind these technologies; assembly processes such as welding, brazing, soldering and fastening are also covered. The course emphasizes process capabilities and limitations, relative cost and guidelines for process selection; and design for manufacturing guidelines. This course contains hands-on exercises in a machine shop environment. Prerequisites: MECH 320 and MECH 340.

MECH 430 Process Instrumentation and Measurements 3 cr.
A course on general concepts of measurement systems; classification of sensors and sensor types; interfacing concepts; data acquisition, manipulation, transmission and recording; introduction to LABVIEW; applications; team project on design and implementation of a measuring device. Prerequisites: PHYS 211 and EECE 312.

MECH 432 Dynamic System Analysis 2 cr.
A course introducing dynamic modeling and analysis of mechanical electrical, thermal and fluid systems. The course integrates software to test and analyze the modeled systems. Prerequisites: EECE 210 and CIVE 210.

MECH 436 Control Systems 3 cr.
A course that teaches the fundamentals of designing classical feedback control systems. The course has a lecture and a lab component. The two components are graded separately, and students must pass both in order to pass the course. Topics covered in the lecture component include: review of modeling and dynamic system analysis, introduction to feedback systems, performance specifications, transient and steady-state response analyses, transfer functions, root locus analysis and design, frequency response analysis and design, lag/lead/lead-lag compensators, and PID controllers. In the hands-on lab component, students use MATLAB/Simulink for modeling, simulating, analyzing, and designing control systems and conduct experiments on hardware setups. Prerequisites: EECE 210, MECH 430, and MECH 432.

MECH 499 Undergraduate Research 3 cr.
This course provides undergraduate students with advanced standing the opportunity to participate in faculty-supervised research. Before registering, students must submit a proposal for approval by the supervising faculty member and the department; the proposal must describe the nature of the research, specific goals and deliverables at the end of the term. The course may be counted once as a technical elective. Prerequisites: Completion of 65 required credits in the major and a cumulative GPA of 3.3 or above.

MECH 500 Approved Experience 1billing.
This is an eight-week professional training course in mechanical engineering.

MECH 501 Final Year Project I 1 cr.
The aim of this course is to provide students with practical experience in some design aspects of mechanical engineering. Students, working in groups, write a literature survey of an assigned project, critically analyze its components and develop a bill of material

necessary for the completion of the project. Prerequisites: MECH 500, MECH 420, MECH 525 and MATH 251.

MECH 502 Final Year Project II 4 cr.
Researched and planned in MECH 501. Prerequisite: MECH 501.

MECH 503 Special Topics in Mechanical Engineering 3 cr.
Special Topics in Mechanical Engineering.

MECH 503A/ MECH 798J Data-Driven Methods in Science and Engineering
This course provides a broad introduction to machine learning methods with applications in science and engineering. Topics include: supervised learning (linear/logistic regression, neural networks, support vector machines etc.), unsupervised learning (clustering, PCA, autoencoders), reinforcement learning, and learning theory (variance/bias trade-off, approximation/estimation errors, etc.). The course will emphasize engineering and scientific applications, including: control theory, nonlinear dynamics, fluid dynamics, and materials science. Recent developments in physics-informed machine learning techniques will be discussed, including: sparse identification of nonlinear dynamics (SINDy), dynamic mode decomposition (DMD), and physics-informed neural networks (PINNs). Pre-requisites: MATH 201, MATH 218, STAT 230, EECE 230.

MECH 510 Design of Thermal Systems 3 cr.
The course seeks to develop in students the ability to integrate rate mechanisms (i.e., heat transfer and fluid dynamics) into thermodynamic system modeling, and analyses and provides design opportunities through open-ended problems with explicit considerations of engineering economics, optimization, environmental impact, ethical concerns, manufacturability and sustainability. Teamwork experience and communication skills are highly stressed. Students will gain hands-on experience with the tools of investigation used for thermal and fluid systems and learn how to approach and solve problems typically encountered in engineering experimental work. Prerequisites: MECH 410L, MECH 412 and MATH 251.

MECH 511 Intermediate Fluid Mechanics 3 cr.
A course that deals with potential flow and boundary layer analysis; lift and drag; flow separation; the use of computational techniques to solve boundary layer problems; viscous internal channel flow and lubrication theory; one-dimensional compressible flow in nozzles and ducts; normal shock waves and channel flow with friction or heat transfer; fluid machinery including pumps and hydraulic turbines. Prerequisites: MECH 314 and MECH 412.

MECH 512 Internal Combustion Engines 3 cr.
A course that examines the fundamentals of internal combustion engine design and operation, with emphasis on fluid/thermal processes. Topics include analysis of the respiration, combustion and pollutant formation processes; heat transfer and friction phenomena; engine types and performance parameters; thermo-chemistry of fuel-air mixtures; use of engine cycle models for performance predictions; and social implications of motorization. Pre- or corequisites: CHEM 202, MECH 414 and MECH 430.

MECH 513 Air Conditioning 3 cr.
A course on human thermal comfort and indoor air quality; solar radiation; heating and cooling load calculations in buildings; air conditioning systems; air and water distribution systems; computer-based calculations. Prerequisite: MECH 412.

MECH 514 Gas Turbines 3 cr.
A course that introduces the thermodynamic and aerodynamic theory forming the basis of gas turbine design: shaft power cycles; gas turbine cycles for aircraft propulsion; turbofan and turbojet engines; design and analysis of centrifugal and axial flow compressors and turbines. Prerequisites: MECH 314 and MECH 414.

MECH 515 Steam Turbines 3 cr.
A course that deals with impulse and reaction steam turbines, steam turbine cycles, flow of steam in nozzles, design aspects of turbines stage losses and efficiency, velocity diagrams; impulse and reaction blading velocities; nucleation, condensation and two-phase phenomena in flowing steam; boiler room and its various equipment; the complete steam power plant; governors, electric generator and power transmission lines. Pre- or corequisites: MECH 314 and MECH 414.

MECH 516 Aerodynamics 3 cr.
A course on theoretical and empirical methods for calculating the loads on airfoils and finite wings by application of classical potential theory, thin airfoil approximations, lifting line theory and panel methods; wings and airplanes; application of linearized supersonic flow to supersonic airfoils; performance and constraint analysis; longitudinal stability and control. Pre- or corequisites: MECH 314 and MECH 414.

MECH 517 Hydraulic Turbines for Power Generation 3 cr.
This course presents the principles and development of hydraulic turbines with emphasis on the techniques for formulating and solving problems. The importance of the incoming flow direction will be stressed. The Pelton, or tangential flow, turbine will be studied in detail. The course will provide a brief introduction to cavitation. Prerequisites: MECH 310 and MECH 410L.

MECH 519 Compressible Flows 3 cr.
The objective of the course is to impart an understanding of the fundamental principles of steady and unsteady one-dimensional perfect-gas flow. Students learn about the behavior of homenergic and homentropic flow, develop an understanding of normal shock waves and homenergic flow in nozzles; learn how to analyze frictional homenergic flow in a constant-area duct and frictionless diabatic flow in a constant-area duct; and learn how to draw skeleton wave diagrams of wave processes. Prerequisites: MECH 310 and MECH 314.

MECH 520 Mechanical Design II 3 cr.
A course on general concepts of measurement systems; classification of sensors and sensor types; interfacing concepts; data acquisition, manipulation, transmission and recording; introduction to LABVIEW; applications; team project on design and implementation of a measuring device. Prerequisites: PHYS 211 and EECE 312.

MECH 521 Manufacturing Processes II 3 cr.
A course on heat treatments, deformation, phase-change and particulate consolidation processing of metals; fabrication processing of non-metallic engineering materials such as ceramics, polymers and composites; emphasis on process capabilities and limitations, relative cost and guidelines for process selection; the behavior of materials under processing conditions; design for manufacturing guidelines. This course emphasizes hands-on training exercises. Prerequisite: MECH 340.

MECH 522 Mechanical CAD/CAE/CAM 3 cr.
The course gives students exposure to the realm of computer-aided design (CAD), computer-aided engineering (CAE) and computer-aided manufacturing (CAM). The course teaches students to harness the power of these powerful tools in the solution of various problems of mechanical engineering. The course utilizes several commercially available software packages but the emphasis is placed on Pro/Engineer. Prerequisites: MECH 320, MECH 420 and MECH 432.

MECH 525 Product Design and Development 3 cr.
Product design and development focuses on every aspect of the design process from defining a challenge to ideation, prototyping, testing, and production. A major focus will be on the development of skills to have a functional product. Further, this course is designed to broaden the student's knowledge of materials classes, properties, limitations, and application. To enhance students' learning experience, many design case studies will be presented and analyzed. This course will also guide the students to develop their designs (working individually or in groups). Prerequisite: MECH 332 and MECH 420.

MECH 530/EECE 560 Mechatronics System Design 3 cr.
A course that discusses mechatronics; data; numbering systems, architecture of the 8-bit Motorola MC68HC11 microcontroller, assembly language programming, A/D and D/A conversion; parallel I/O programmable timer operation, interfacing sensors and actuators, applications; a team project on design and implementation of a mechatronic system. Prerequisites: EECE 312, MECH 430 or EECE 461.

MECH 531 Mechanical Vibrations 3 cr.
A course on free and forced response of non-damped and damped system; damping vibration absorption; response of discrete multi-degree of freedom systems; modal analysis; vibration measurement, case studies, vibration analysis with Matlab and Simulink. Prerequisite: MECH 230.

MECH 532 Dynamics and Applications 3 cr.
This course examines the dynamics of particles and rigid bodies moving in three dimensions. Topics include Lagrange's equations of motion for particles, rotations of rigid bodies, Euler angles and parameters, kinematics of rigid bodies and the Newton-Euler equations of motion for rigid bodies. The course material will be illustrated with real examples such as gyroscopes, spinning tops, vehicles and satellites. Applications of the material range from vehicle navigation to celestial mechanics, numerical simulations and animations. Prerequisite: MECH 230.

MECH 533 Electric Machines and Drives 3 cr.
This course covers the fundamentals of electromagnetic circuits, three-phase circuits, transformers: single-phase ideal and real transformers, construction and operation; fundamentals of AC machines, operation of synchronous generators; induction motors: construction and principle of operation, power, torque and efficiency expressions; AC drives: starting and speed control strategies, plugging and regenerative breaking; DC motors types and control strategies, stepper motors: types, operational characteristics, drivers configurations. Prerequisites: EECE 210 and MECH 310.

MECH 535 Fluid Power Systems 3 cr.
This is a senior level undergraduate lecture course which covers the fundamentals of fluid power transmission and drive technology. Students learn about the main hydraulic and pneumatic components and their static and dynamic performance characteristics. Students learn how to read circuit diagrams and understand the principles of circuit operation. Through the use of simulation software, students will learn to design and analyze complex fluid power systems. Prerequisites: MECH 314 and MECH 436.

MECH 540 Selection and Properties of Materials 3 cr.
A course that reviews the mechanical behavior of materials. Topics covered include structure-property relationships in materials; continuum mechanics and tensor notation; theorems of elastic, plastic, viscoelastic behavior of materials; elements of creep, fatigue and fracture mechanics. Prerequisite: MECH 340.

MECH 550 Computer Applications in Mechanical Engineering 3 cr.
A course dealing with the application of numerical techniques for the solution of a variety of mechanical engineering problems involving systems of linear or nonlinear algebraic equations, systems of ordinary differential equations of the initial and boundary value types, systems of ordinary differential equations, and partial differential equations of the parabolic, elliptic and hyperbolic types. Engineering applications are introduced through a number of case study problems. Prerequisites: MATH 202 and MATH 251.

MECH 555/EECE 463 Artificial Intelligence for Control Systems 3 cr.
This is an introductory course in the evolving field of artificial intelligence (AI) for control systems. It aims at giving students a solid foundation in AI by covering basic techniques such as A* searching, reasoning under uncertainty, probabilistic reasoning over time, multi objects tracking, path planning, scheduling, communicating, perceiving and learning as applied to control systems, robotics and manufacturing. The group project and individual lab assignments will provide students with hands-on implementation experience of an intelligent control agent capable of basic learning. Prerequisite: EECE 460 or MECH 436.

MECH 600/CHEN 690 Reservoir Engineering 3 cr.
This course will cover both fundamental and applied reservoir engineering concepts. It aims at understanding the rock and fluid properties and how these properties interact to affect production from a hydrocarbon reservoir. From a practical standpoint, the course will focus on classical reservoir engineering, reservoir drive mechanisms, well testing and well test analysis as well as the use of reservoir simulation to assist the reservoir engineer at different stages of a hydrocarbon reservoir lifecycle. Prerequisites: MECH 310 and CHEN 490.

MECH 602 Energy Conservation and Utilization 3 cr.
A course that deals with methods for reduction of losses and gains from a building envelope, energy conservation in cooling, heating, air-handling, and plumbing systems; and energy management programs. Prerequisites: MECH 310 and MECH 412.

MECH 603 Solar Energy 3 cr.
A course discussing the fundamentals of solar radiation, collectors and concentrators, energy storage, estimation and conversion formulas for solar radiation. Prerequisite: MECH 412.

MECH 604 Refrigeration 3 cr.
A course on fundamental concepts and principles, cold storage; functions and specifications of refrigeration equipment, applications. Prerequisite: MECH 412.

MECH 606 Aerosol Dynamics 3 cr.
This course covers the physical and chemical principles that underlie the behavior of aerosols—collections of solid or liquid particles, such as clouds, smoke, and dust, suspended in gases—and the instruments used to measure them. Topics include: aerosol particle characterization; transport properties and phenomena in quiescent, laminar, and turbulent flows; gas- and particle-particle interactions; and applications to human respiratory tract deposition and atmospheric pollution. Prerequisites: MECH 314, MECH 412 and MECH 414; or consent of instructor.

MECH 607 Micro Flows Fundamentals and Applications 3 cr.
A course on the theory and applications of micro flows; the continuum hypothesis and the various flow regimes; shear and pressure driven micro flows; electrokinetically driven liquid micro flows; compressibility effects of the micro flow of gases; particulate flows in bio-applications; modeling techniques; hybrid continuum-molecular methods; reduced order modeling of micro flows in multi-physics micro flow applications; case studies in BioMEMS. Prerequisites: MECH 310, MECH 314 and MECH 412; or equivalent.

MECH 608 Applied Reservoir Engineering II 3 cr.
This course introduces the advanced concepts and principles needed to analyze hydrocarbon reservoir fluid systems, and defines the size and contents of petroleum accumulation. Students will learn to organize programs for collecting, recording and analyzing data describing the advanced characteristics of individual well and reservoir performance. This course of advanced reservoir engineering topics covers a variety of topics such as: fluid flow in a porous medium; fluid distribution, fluid displacement; fractional flow equation; Buckly-Leverete equation; pressure draw-down and pressure buildup analysis; in addition to the nature and type of primary, secondary and tertiary recovery; water influx and prediction of water-flood behavior, reservoir model simulation and history matching. Prerequisite: MECH 600.

MECH 609 Experimental Methods in Fluid Dynamics 3 cr.
This is a graduate level course that introduces students to experimental methods used to measure fluid flow quantities such as pressures, forces and velocities. The course starts with an introduction to what and why we measure, uncertainty analysis and measurement error estimation. Some basic techniques for data reduction and data post-processing are introduced. The available fluid measurement methods are surveyed briefly, with selected applications. Emphasis is on advanced optical diagnostic techniques, namely particle image velocimetry (PIV) and laser induced fluorescence (LIF). The theoretical foundations of these techniques are established and the discussion extended to practical considerations, including software and hardware components. A few laboratory sessions are incorporated into the course to supplement the lectures and make use of the instruments available in the ME department, including the open circuit wind tunnel and the PIV system. In addition to the lectures and lab sessions, there is emphasis on the available literature. Prior knowledge of the basic principles of fluid mechanics and fluid systems is required. MATLAB is needed for coursework. Prerequisite: MECH 314.

MECH 611/BMEN 611 Computational Modeling of Biomechanics 3 cr.
This course is open to engineering, science and medical students wanting a glimpse into the world of computational finite element modeling and simulation to investigate and solve biomedical problems. Students will take a journey through the processes involved in producing a computational finite element model in the biomedical field, starting at construction of model geometry from medical imaging data (CT/MRI), through to model creation, simulation and visualization using finite element analysis software (ANSYS Workbench). Students will also be exposed to a selection of experimental lab techniques in biomechanics and physiology to acquire data required for model development and validation. In pursuit of developing an appreciation for the areas covered, the course will incorporate a mix of theory, demonstrations, practice, real-world modeling applications and research seminars. Pre-requisites: MATH 201 and consent of instructor.

MECH 615 Continuum Mechanics 3 cr.
The course offers a unified presentation of continuum mechanics such as fluids, elasticity, plasticity and viscoelasticity. The general concepts and principles applicable to all continuous media are presented followed by defining equations for a particular medium. Topics include fundamentals of tensor calculus, stress, deformation and strain, general principles, constitutive equations for solids and fluids; applications. Prerequisites: MECH 320, MATH 218 (or equivalent), MATH 212 (or equivalent), or graduate level standing.

MECH 617 Smart Materials and Structures 3 cr.
This course presents the fundamentals of modeling, analysis, and design of smart materials and structures. Students will be exposed to the state of the art of smart materials and systems, spanning piezoelectrics, shape memory alloys, electroactive polymers and

fiber optics. Students will explore the application of such materials in structural systems from the aeronautic, automotive, biomedical and nautical industry. Smart materials are a class of materials varying in chemical composition and physical state that have one or more physical or physiochemical properties that can be significantly changed by external stimuli, such as pressure, temperature, electric or magnetic field, etc. Each student will participate in a group project. Under the guidance of the professor, the student will learn to develop a proposal, do the project investigation and prepare and carry out the technical communications (writing and oral). In any of these scenarios, the student is directly responsible for the progress and quality of the results. At the end of the term, the student is required to submit a written project report and to give a seminar presenting the aims and achievements of the project.

MECH 618 Enterprise Resource Planning (ERP) in Manufacturing Systems 3 cr.
This course will cover how today's industries can cope with the challenges induced by global competition. The course will address: challenges of today's industry; consequences of these challenges on product design and organizations; the role of the information systems, PLM, ERP and APS; and practice of PLM and ERP systems on the SAP Business Suite and Business by Design solution.

MECH 619 Quality Control in Manufacturing Systems 3 cr.
The course covers the foundations of modern methods of quality control and improvement that may be applied to manufacturing industries. It aims to introduce students to the tools and techniques of quality control used in industrial applications and develop their ability to apply the tools and techniques to develop solutions for industrial problems. Emphasis is given to the application of quality management techniques to solve industrial case problems. The course emphasizes the philosophy and fundamentals of quality control, the statistical foundations of quality control, statistical process control, acceptance sampling, and product and process design. Prerequisites: STAT 230 and MECH 421.

MECH 622 Modeling of Machining Processes and Machines 3 cr.
This course covers the principles and technology of metal machining; mechanics of orthogonal and 3D metal cutting; static deformations, forced and self-excited vibrations and chatter; and design principles of metal cutting CNC machines. Prerequisite: MECH 421.

MECH 624 Mechanics of Composite Materials 3 cr.
A course on anisotropic elasticity and laminate theory, analysis of various members of composite materials, energy methods, failure theories and micromechanics. Materials and fabrication processes are introduced. Prerequisites: MECH 320 or CIVE 310, and MECH 340; or equivalent.

MECH 625 Fatigue of Materials 3 cr.
A course that deals with high cycle fatigue; low cycle fatigue; S-N curves; notched members; fatigue crack growth; cycling loading; Manson-Coffin curves; damage estimation; creep and damping. Prerequisite: MECH 320 or CIVE 310.

MECH 626 Metals and Their Properties 3 cr.
A course that investigates ferrous and non-ferrous alloys; industrial equilibrium diagrams; heat treatment of metals; surface properties of metals; plastic deformation of metals; elements of fracture mechanics; process-structure-properties relations. Prerequisite: MECH 340.

MECH 627 Polymers and Their Properties 3 cr.
A course on chemistry and nomenclature, polymerization and synthesis, characterization techniques, physical properties of polymers, viscoelasticity, and mechanical properties and applications. Prerequisite: MECH 340.

MECH 628 Design of Mechanisms 3 cr.
A course involving graphical and analytical synthesis of single- and multi-loop linkage mechanisms for motion, path and function generation through 2-3-4- and 5-precision positions; optimum synthesis of linkage mechanisms; synthesis of cam-follower mechanisms; synthesis of gear trains. Prerequisite: MECH 332.

MECH 630 Finite Element Methods in Mechanical Engineering 3 cr.
A course on the classification of machine components; displacement-based formulation; line elements and their applications in design of mechanical systems; isoparametric formulation; plane stress, plane strain, axi-symmetric, and solid elements and their applications; modeling considerations and error analysis; introduction to potential energy and Galerkin approaches; and analysis of field problems. Prerequisites: MECH 420 and MATH 251.

MECH 631 Micro Electro Mechanical Systems (MEMS) 3 cr.
A course that deals with materials for micro-sensors and micro-actuators, materials for micro-structures, microfabrication techniques and processes for micromachining, computer-aided design and development of MEMS, commercial MEMS structures and systems, packaging for MEMS, future trends, and includes a team project. Prerequisite: MECH 430.

MECH 632 Structural Health Monitoring 3 cr.
The general concepts of structural health monitoring will be introduced. The commonly used techniques to provide continuous monitoring will be discussed (vibration and ultrasonic wave-based methods). Further, determination of critical measurement types and location; data acquisition systems and instruments; and design of measurement setup will be discussed. Handling data with advanced machine learning algorithm, such as artificial neural networking and support vector machine will be introduced. Students will also be introduced to the damage detection and condition assessment process. Prerequisites: MECH 320 and MECH 430.

MECH 633 Biomechanics 3 cr.
A course on the study of biomechanical principles underlying the kinetics and kinematics of normal and abnormal human motion. Emphasis is placed on the interaction between biomechanical and physiologic factors (bone, joint, connective tissue, and muscle physiology and structure) in skeleto-motor function and the application of such in testing and practice in rehabilitation. The course is designed for senior level undergraduate/graduate engineering students with no previous anatomy/physiology. Prerequisite: CIVE 210, MECH 320, CIVE 310 or consent of instructor.

MECH 634/BMEN 608 Biomaterial and Medical Devices 3 cr.
A course that examines the structure-property relationships for biomaterials and the medical applications of biomaterials and devices. The first part of the course focuses on the main classes of biomaterials, metal, ceramic, polymeric and composite implant materials, as well as on their interactions with the human body (biocompatibility). The second part examines the various applications of biomaterials and devices in different tissue and organ systems such as orthopedic, cardiovascular, dermatological and dental applications. Experts from the medical community will be invited to discuss the various applications. Prerequisite: MECH 340 or consent of instructor.

MECH 635/BMEN 601 Computational Modeling of Physiological Systems 3 cr.
This course focuses on the quantitative modeling of different physiological systems. It provides students with current concepts of the mathematical modeling, and different quantitative descriptions of cellular and organ physiology. At the subcellular/cellular level, we will examine mechanisms of regulation and homeostasis. At the system level, the course will cover basic aspects of anatomical and pathophysiological features of the nervous, neural, cardiovascular and respiratory systems. Several physiological processes are treated as case studies for increasing complexity in modeling dynamical systems. Prerequisites: MATH 202, EECE 230 or 231, or consent of instructor.

MECH 637 Micromechanics and Crystal Plasticity 3 cr.
This course covers the theoretical knowledge of the deformation process in single and polycrystalline solids with an emphasis on the role of dislocations and other types of defects on the overall mechanical properties of materials. Topics will include an introduction to crystallography, defects in crystals, fundamentals of dislocations, strengthening mechanisms, microstructures and yielding. Prerequisites: MECH 340 and MECH 320.

MECH 638 Material, Selection for Design 3 cr.
This course describes the procedures for material selection in mechanical design, in order to ensure that the most suitable materials for a given application are identified from the full range of materials available. It targets both senior undergraduate and graduate students and investigates a vast number of conventional, unconventional, and hybrid materials used in the industry, as well as their selection and design processes that are followed by new product development departments around the world. Factors such as working environment, design requirements, fabrication type, cost, recyclability, and others are covered. Additionally, simulations of stress analysis during the manufacturing and application modes are investigated. Prerequisite: MECH 340 Engineering Materials.

MECH 641/EECE 661 Robotics 3 cr.
A course discussing concepts and subsystems; robot architecture; mechanics of robots: kinematics and kinetics; sensors and intelligence; actuators; trajectory planning of end effector motion; motion and force control of manipulators; robot languages. Co-requisite: MECH 436, or EECE 460.

MECH 642/EECE 692 Computer Vision 3 cr.
An introductory course on the problems and solutions of modern computer vision. Topics covered include image acquisition, sampling and quantization; image segmentation; geometric framework for vision: single view and two-views; camera calibration; stereopsis; motion and optical flow; recognition; pose estimation in perspective images. Prerequisites: MATH 202 and EECE 230 or EECE 231.

MECH 643 Mechatronics and Intelligent Machine Engineering II 3 cr.
A course on sensors, sensor noise and sensor fusion; actuators; system models and automated computer simulation; information, perception and cognition; planning and control; architectures, design and development. A team project is included. Prerequisites: MECH 340 and MECH 530.

MECH 644 Modal Analysis 3 cr.
A course reviewing MDOF system vibrations, frequency response functions, damping, mobility measurement, curve fitting and modal parameter extraction, derivation of mathematical models; laboratory experiments and projects are included. Prerequisite: MECH 531.

MECH 645 Noise and Vibration Control 3 cr.
A course on fundamental concepts in noise and vibration, passive and active damping strategies, damping materials, control methods and applications. Prerequisites: MECH 230, MATH 212 and MECH 531.

MECH 646/EECE 697 Wheeled Mobile Robotics 3 cr.
A course that provides in-depth coverage of wheeled mobile robots. The material covers: non-holonomy and integrability of kinematic constraints; modeling: kinematics, dynamics and state-space representation; and nonlinear control strategies (open-loop and closed-loop). Five case studies are covered throughout the course: car-like, cart-like, omni-directional wheeled, mobile wheeled pendulums and bike-like robots. Prerequisite: Senior or graduate standing.

MECH 647 Hydraulic Servo Systems 3 cr.
A graduate lecture course which covers the fundamentals of modeling and control of hydraulic servo-systems. It provides theoretical background and practical techniques for the modeling, identification and control of hydraulic servo-systems. Classical and advanced control algorithms are discussed. The use of Matlab/Simulink and DYMOLA will be an integral part in this course. Prerequisites: MECH 314 and MECH 436, or MECH 314 and EECE 460.

MECH 648/EECE 669 Nonlinear Systems: Analysis, Stability and Control 3 cr.
Introduction to the theory of systems of coupled, nonlinear, time-varying ordinary differential equations. Topics include existence and uniqueness of solutions, stability of equilibria, nonlinear stability theory, Lyapunov analysis, Barbalat's lemma, input-to-state stability, input-output stability, nonlinear control design techniques, feedback linearization, backstepping, and sliding mode control. Prerequisite: MECH 436 or EECE 460.

MECH 650/EECE 698 Autonomous Mobile Robotics 3 cr.
This course is designed to provide engineering graduate- and fourth-year students with the opportunity to learn about autonomous mobile robotics. Topics include sensor modeling, vehicle state estimation, map-based localization, linear and nonlinear control, and simultaneous localization and mapping. Prerequisites: EECE 230/1, EECE 312 and MECH 435; or EECE 230 and EECE 460.

MECH 653/EECE 660 System Analysis and Design 3 cr.
A course that outlines state-space models of discrete and continuous, linear and nonlinear systems; controllability; observability; minimality; Eigenvector and transforms analysis of linear time invariant multi-input multi-output systems; pole shifting; computer control; design of controllers and observers. Prerequisite: MECH 436 or EECE 460 or equivalent.

MECH 654/EECE 665 Adaptive Control 3 cr.
A course that includes the control of partially known systems; analysis and design of adaptive control systems; self-tuning regulators; model reference adaptive control of uncertain dynamic systems; typical applications. Prerequisite: EECE 460 or MECH 436, or consent of instructor.

MECH 655/EECE 662 Optimal Control 3 cr.
A course on optimization theory and performance measures, calculus of variations, the maximum principle, dynamic programming, numerical techniques, LQR control systems. Prerequisite: Senior or graduate standing, or consent of instructor.

MECH 656/EECE 663 System Identification 3 cr.
This course introduces the fundamentals of system identification as the basic mathematical tools to fit models into empirical input-output data. While rooted in control theory, applications extend to general time-series modeling and forecasting, such as stock prices, biological data and others. Topics covered include nonparametric identification methods: time and frequency response analysis; parametric identification methods: prediction error methods, least squares, linear unbiased estimation and maximum likelihood; convergence, consistency and asymptotic distribution of estimates; properties and practical modeling issues: bias distribution, experiment design and model validation. Prerequisite: Senior or graduate standing, or consent of instructor.

MECH 657 Vehicle Dynamics and Control 3 cr.
A course designed for seniors and graduate students. This course of advanced vehicle dynamics begins with whole vehicle motion, including acceleration, braking, aerodynamics, steering, rollover, and extends to vehicle component dynamics, including tire, drive train, and steering, and suspension. Automotive active safety control systems (e.g., anti-lock braking, traction control, cruise control, vehicle stability control) will be introduced. An outlook into autonomous ground vehicle, and their main components and technology enablers, will be provided at the end of the course. Prerequisites: MECH 436.

MECH 663 Computational Fluid Dynamics 3 cr.
A course that deals with the discretization process in fluid dynamics, numerical approaches and applications, iterative and direct matrix methods, and numerical implementation of turbulence models. Prerequisites: MECH 314 and MECH 412.

MECH 665 Unsteady Gas Flow 3 cr.
A course examining equations of unsteady continuous adiabatic multidimensional flows, unsteady continuous one-dimensional flow of a perfect gas with and without discontinuity, applications and pressure exchangers. Prerequisite: MECH 414.

MECH 670 Laboratory for Renewable Energy in Buildings 2 cr.
A laboratory course that investigates means of reducing building energy consumption first through green building design, giving consideration to building orientation, thermal massing, wind- and buoyancy-driven flows, “urban heat island” effects, and second, by retrofitting existing buildings with energy saving materials and devices such as window films, solar water heaters and green roofs. This course is offered because in Lebanon and the region, electricity consumption for building services accounts for a major portion of national energy use and greenhouse gas emissions. Students will measure and compare effects of various designs and retrofit interventions on the thermal performance, lighting and glare, and natural ventilation of model-scale buildings; and characterize performance of devices used in green building design. Lab assignments may vary by term but will normally include mathematical modeling and experimental measurement components organized around aspects of building physics. Prerequisite: MECH 430.

MECH 671 Renewable Energy Potential, Technology and Utilization in Buildings 3 cr.
A course that covers the principles and utilization of solar (thermal and photovoltaic), wind and geothermal energy, as well as energy from biomass. Issues relevant to energy efficiency and energy storage are discussed (heat and power store, and bio-tanks). The course distinguishes between energy sources for large-scale, industrial/commercial settings and those intended for smaller structures. The potential of using renewable energy technologies as a complement to and, to the extent possible, replacement for conventional technologies, and the possibility of combining renewable and non-renewable energy technologies in hybrid systems, are analyzed. Design aspects of active, passive,

wind, bio-energy and photovoltaic energy conversion systems for buildings; and strategies for enhancing the future use of renewable energy resources are presented. The course will include several demonstrations of concept experiments. Prerequisite: MECH 310. Students cannot receive credit for both MECH 671 and EECE 675 or ENST 300.

MECH 672 Modeling Energy Systems 3 cr.
A course that covers indoor space thermal models. The course also deals with the analysis and modeling of building energy systems involving applications of thermodynamics, economics, heat transfer, fluid flow and optimization. The use of modern computational tools to model thermal performance characteristics of components of HVAC systems including chillers, recovery systems, flow control devices, heat exchanges, solar panels, dehumidification systems, boilers, condensers, cooling towers, fans, duct systems, piping systems and pumps. The course will use modern simulation tools extensively. Prerequisite: MECH 310.

MECH 673 Efficient Buildings with Good Indoor Air Quality 3 cr.
A course covering energy consumption standards and codes in buildings and energy conservation measures in built-in environments to enhance the building's energy efficiency while maintaining space, thermal comfort and indoor air quality requirement. Fundamental ventilation, indoor-air-quality, infiltration, natural and mechanical ventilation, importance and impact of indoor air quality on human health and energy performance of the building air conditioning system, ASHRAE, and ASHRAE requirement for ventilation. Particular focus will be given to green energy alternative measures. An overview of the different heating, ventilation and air conditioning system designs is also covered. Performance and energy consumption of the conventional air conditioning system (constant and variable air volume), as well as the hybrid integrated air conditioning systems will be discussed and compared. The course will include several demonstrations of concept experiments. Pre- or corequisite: MECH 310 or equivalent.

MECH 674/ENST 305/ECON 333 Energy Economics and Policy 3 cr.
A course that aims at developing an understanding of practical analytical skills of energy economics and planning approaches taking into account the cost of impact on the environment. This course will provide fundamental concepts of economic issues and theories related to energy, such as economics of natural and energy resources, aggregate supply and demand analysis, and the interrelationship between energy, economics and the environment as well as some important issues in energy policy. The course will also demonstrate the use of economic tools for decision-making in energy and environment planning and policy. It will explore the terminology, conventions, procedures and planning policy applications. It will also cover a number of contemporary energy and environmental policy issues, including energy security, global warming, regulations of energy industries, energy research and development, and energy technology commercialization. Prerequisite: INDE 301. Students cannot receive credit for both MECH 674 and ENST 305 or ECON 333.

MECH 675 Building Energy Management Systems 3 cr.
A course that provides an opportunity for students to explore topics in energy management systems and management strategies for new and existing buildings; energy use in buildings; energy systems analysis and methods for evaluating the energy system efficiency; energy audit programs and practices for buildings and facilities; initiating energy management programs; guidelines for methods of reducing energy usage in each area in buildings; conservation of energy in planning, design, installation, utilization, maintenance; control and automation of the mechanical systems in existing and new buildings; air conditioning and ventilation systems in buildings; assessment and optimization of energy control strategies; prediction methods of economic and environmental impact of implemented control strategies and indoor settings. Prerequisites: MECH 310 and MECH 412.

MECH 676 Passive Building Design 3 cr.
A course that centers on issues surrounding the integration of sustainable and passive design principles into conceptual and practical building design. Topics will include: solar geometry, climate/regional limitations, natural lighting, passive design and sustainability initiatives, insulating and energy storing material, and bioclimatic design and concepts. Case studies will be used extensively as a vehicle to discuss the success/failure of ideas and their physical applications. The course will focus on the use of energy auditing/modeling methods as means to both design and evaluate the relative "greenness" of buildings, as well as to understand the global implications of sustainable buildings. The course will include several demonstrations of concept experiments. Prerequisite: MECH 671.

MECH 677 Heat Pumps 3 cr.
A course that focuses on heat pumps in low energy and passive buildings as well as ground source heat pump fundamentals, loop systems, open systems, soil/rock classification and conductivity, grouting procedures, and performance of ground source heat pumps in housing units; water loop heat pumps inside the building, bore holes, design and optimization of heat pump plants, including heat sources for such plants, and cost-effective design options will also be considered. The course includes study visits and seminars given by industry experts. Prerequisite: MECH 310.

MECH 678 Solar Electricity 3 cr.
A course that focuses on the solar cell: photo generation of current, characteristic current-voltage (I-V) curve, equivalent circuit, effect of illumination intensity and temperature. The Photovoltaic (PV) generator: characteristic I-V curve of a PV generator, the PV module, connections of modules, support, safeguards, shadowing; the PV system: batteries, power conditioning; PV systems: grid-connected and stand-alone systems, economics and sizing, reliability, applications. Manufacturing: preparation of crystalline silicon wafers, formation of contacts, coatings, construction of modules. The course will include several demonstrations of concept experiments. Prerequisite: EECE 210.

MECH 679 Energy Audit Lab 2 cr.
A course designed to give students "hands-on" experience in carrying out energy audit measurements and studies on buildings to identify possible savings through selected energy conservation measures. Students will carry out measurements to investigate ventilation, air conditioning equipment, lighting and other office and lab equipment. Students will then be introduced to Visual DOE or E-Quest to perform energy simulation of buildings. Such tools will then be used to carry out a full building simulation taking into consideration occupancy data, equipment, lights and building envelope. A base case of energy usage will thus be established and energy conservation will then be applied to deduce possible savings and their economic value. Pre- or corequisite: MECH 672.

MECH 680 HVAC and Refrigeration Systems Lab 3 cr.
The focus is on HVAC design optimization and energy conservation measures in built-in environment. It includes concepts of district cooling/heating systems, dehumidification and personalized ventilation systems. This course has a major component of hands-on experience with building energy systems design, operation and efficiency. Students will learn how to use and develop test equipment and plan for assessing system performance. Experiments and lab projects will span a series of advanced modules on sustainable, energy-efficient HVAC and refrigeration systems as laboratory topics. Lab topics may vary every term. Prerequisites: Advanced standing and MECH 310.

MECH 681/CIVE 686/ARCH 073 Sustainable Built Environments 3 cr.
A course that enhances knowledge about the past present and future conditions of

the built environment. The course starts with a general overview of global / regional environmental, social and economic issues. Then, focusing on the built environment, students are introduced to climate responsive and environmentally friendly concepts in planning and design. The impact of using construction materials and their environmental impact throughout the building's lifecycle will also be discussed. Students will gain critical knowledge through interactive lectures, case study analysis and the proposal of concepts relating to a particular theme. Upon completing the course, students will be equipped with the necessary knowledge that will enable them to make informed project related design decisions in their careers.

MECH 683 Wind Turbines: Design and Applications 3 cr.
This course offers an overview of key aspects in wind energy technology and the engineering principles underlying the operation of wind turbines. It covers the essentials of wind turbine systems, their working principle, power curve characteristics, speed control, and calculation. It also covers an overview of wind resource and historical development of wind. This course demonstrates how to apply fundamental principles of thermodynamic and fluid mechanics to wind turbine engineering. It also introduces fundamental concepts in materials and show how these concepts are applied to analyze stresses in airfoils and other wind turbine components. It also provides a summary of the electrical aspects of wind energy conversion, particularly regarding the actual generation and conversion of the electricity. Finally, this course examines wind turbine control system, explain the control system components in general, and covers common turbine operating strategies that are found in modern turbines. At the end of the course, students will achieve a basic solid understanding of the aerodynamics, dynamics, mechanics, electricity production, and control of wind turbines. Pre-requisite: MECH 314 and MECH 320.

MECH 691/ ENMG 628/ EECE 643 Convex Optimization 3 cr.
Advanced course that covers topics such as convex sets, convex functions, convex optimization problems, scalarization for vector optimization, duality theory, optimality conditions. Example problems include least-squares, maximum likelihood estimation, minimax, and extremal volume problems. Prerequisite: MATH 218.

Faculty Of Health Sciences (FHS)

Undergraduate Program

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Amal El- Kassis	Student Services Manager
Daisy Nasr	Financial Officer
Gina Cordahi	Operations and Strategic Initiatives Manager
Diala Badreddine	Accreditation Officer
Annie Tabakian	Project Manager (Communications)
Maya Abou Khouzam	Events and Projects Officer
Maia Sieverding	Director, Public Health Education Office

Faculty Academic Support

Suzanne El Khechen	Instructor (Assistant to Dean)
Nida' El Helou	Instructor (Practicum Coordination and Career Services)
Maya Abi Chahine	Instructor of Public Health Practice (University for Seniors)
Rima Afifi	Adjunct Faculty

Historical Background

The Faculty of Health Sciences (FHS) was established in 1954 as an independent School of Public Health, the first of its kind in the region. The name of the school was changed to the Faculty of Health Sciences in 1978 to accommodate programs in allied health.

FHS serves to educate and train professionals and competent leaders to help meet the health needs of Lebanon and the region. Currently, FHS hosts four departments: Epidemiology and Population Health (EPH), Environmental Health (EH), Health Promotion and Community Health (HPCH), and Health Management and Policy (HMP); and a Division of Health Professions hosting three programs in collaboration with the Faculty of Medicine: Medical Audiology Sciences , Medical Imaging Sciences and Medical Laboratory Sciences. FHS offers a BS degree in: Environmental Health, Medical Audiology Sciences, Medical Imaging Sciences and Medical Laboratory Sciences; a BA degree in Health Communication; an MS in Public Health (MPH) (concentrations in Epidemiology and Biostatistics, Health Promotion and Community Health, and Health Management and Policy); and an MS in Epidemiology. FHS also offers an MS in Environmental Sciences, major: Environmental Health (as part of an Interfaculty Graduate Environmental Sciences Program), an Executive Master in Health Care Leadership, and a PhD program in Epidemiology. In addition, FHS provides teaching of public health to students in the Faculty of Medicine.

Accreditation

In October 2006, the Public Health Program (PHP) of the Faculty of Health Sciences (FHS) became accredited by the Council on Education for Public Health (CEPH) and was reaccredited in 2012 for seven years term extending to 2019. In December 2019, the CEPH Board voted to renew the accreditation of the program for another seven-year term ending in 2026. The PHP includes the Master of Public Health, Master of Science in Epidemiology, Master of Science in Environmental Health, and the PhD in Epidemiology, as well as the Bachelor of Arts in Health Communication and the Bachelor of Science in Environmental Health. CEPH is an independent agency in the United States, which is recognized to accredit schools and programs of public health. The PHP at FHS was the first graduate public health program to be accredited by CEPH outside the Americas and remains the only program in the Arab region. Accreditation indicates that the PHP of the FHS meets standards for Public Health Education of leading schools of public health in the world.

Mission

To improve the health of populations and advance the public health discipline and field of health professions in the region and beyond, through excellence in education, research, and community engagement.

Vision

The leading academic voice and driver for equity, justice, and better health in the Arab region and beyond.

Undergraduate Programs

Admission Requirements

To be eligible for admission to the programs leading to the degree of Bachelor of Science, candidates must have satisfactorily completed the freshman program in the Faculty of Arts and Sciences or its equivalent with a minimum cumulative GPA of 2.3 and a minimum science GPA of 2.3.

[1] Currently Frozen

Freshman students applying to Environmental Health must complete the following science requirements: CHEM 101, CHEM 101L, MATH 101. Freshman students applying to Medical Laboratory Sciences must complete the following science requirements: CHEM 101, CHEM 101L, CHEM 102, CHEM 102L, MATH 101, MATH 102 and BIOL 101. Freshman students applying to Medical Imaging Sciences or Medical Audiology Sciences must complete the following science requirements: PHYS 103 and PHYS 103L, MATH 101, MATH 102 and BIOL 101.

Freshman students applying to Health Communication must attain a cumulative GPA of 2.3 in the Freshman year and a cumulative GPA of 2.3 in English courses taken in the Freshman year.

Courses taken before the student is admitted to any of the programs may be credited at the discretion of the appropriate department.

To be eligible for admission to advanced standing (second year) in science majors, a candidate must have completed the equivalent requirements for the first (or second) year of undergraduate study in the Faculty of Health Sciences in the respective major and have met the following criteria:

- a minimum cumulative GPA of 2.3
- and a minimum GPA of 2.3 in science courses.

To be eligible for admission to advanced standing (second year) in Health communication major, a candidate must have completed the equivalent requirements for the first (or second) year of undergraduate study in the major and have met the following criteria:

- a minimum cumulative GPA of 2.3.

A student who has completed a minimum of two terms of study as a sophomore or its equivalent is eligible for admission to the first year in the Faculty of Health Sciences in science majors if the following criteria are met:

- a minimum cumulative GPA of 2.3,
- a minimum GPA of 2.3 in science courses,
- and completion of a minimum of 6 credits in basic science.

A student who has completed a minimum of two terms of study as a sophomore or its equivalent is eligible for admission to the first year in the Health communication major if the following criteria are met:

- a minimum cumulative GPA of 2.3.

Admission decisions are subject to availability of places in the desired program of study. Lebanese students must present the Lebanese Baccalaureate or its equivalent and should be considered eligible by the AUB Office of Admissions for admission to the first year in health sciences. These candidates are evaluated based on SAT I scores and school performance.

Candidates holding the Lebanese Baccalaureate Part II—literature and humanities—or its equivalent are required to take CHEM 101, 101L and MATH 101 as remedial courses if joining the Environmental Health or Medical Laboratory Sciences program, or MATH 101 if joining the Medical Imaging Sciences or Medical Audiology Sciences program. Candidates holding the Lebanese Baccalaureate Part II—sociology and economy—or its equivalent are required to take CHEM 101 and 101L as a remedial course if joining the Environmental Health or Medical Laboratory Sciences program.

For complete and detailed information regarding admission to AUB, including recognized certificates, see the Admissions section and Certificate and Class Chart on of this catalogue.

Graduation Requirements

All recommendations for graduation are made by vote of the faculty, upon the recommendation of the Undergraduate Curriculum and Undergraduate Student Academic Affairs and Student Affairs (UGCA-SA) Committee.

BS in Environmental Health: To be eligible for graduation with the degree of Bachelor of Science in Environmental Health, a student must:

- pass a minimum of 96 credit hours after freshman science class or its equivalent,
- achieve a total cumulative GPA of 2.3 and achieve **a cumulative GPA of 2.3 in the major field of study.**

BA in Health Communication: To be eligible for graduation with the degree of Bachelor of Arts in Health Communication, a student must:

- pass a minimum of 95 credit hours after freshman class or its equivalent,
- achieve a total cumulative GPA of 2.3 and achieve **a cumulative GPA of 2.3 in the major field of study.**

BS in Medical Audiology Sciences: To be eligible for graduation with the degree of Bachelor of Science in Medical Audiology Sciences, a student must:

- pass a minimum of 103 credit hours after freshman science class or its equivalent,
- obtain a minimum grade of C+ in each of ORLG 220, ORLG 230, ORLG 240 and ORLG 250,
- achieve a total cumulative GPA of 2.3,
- and achieve a cumulative GPA of 2.3 in the major field of study.

BS in Medical Imaging Sciences: To be eligible for graduation with the degree of Bachelor of Science in Medical Imaging Sciences, a student must:

- pass a minimum of 102 credit hours after freshman science class or its equivalent,
- achieve a total cumulative GPA of 2.3,
- and achieve a cumulative GPA of 2.3 in the major field of study.

BS in Medical Laboratory Sciences: To be eligible for graduation with the degree of Bachelor of Science in Medical Laboratory Sciences, a student must:

- pass a minimum of 103 credit hours after freshman science class or its equivalent,
- achieve a total cumulative GPA of 2.3,
- and achieve a cumulative GPA of 2.3 in the major field of study (LABM and MLSP courses).

For more information about graduation requirements, please refer to the General University Academic Information section.

Residency Requirements

As per AUB policy, students must earn their final forty-five (45) credits while in residence (refer to the General University Academic Information section).
Given the structured curriculum, nature of the practical training, and course offerings, students of the Faculty of Health Sciences must meet the following minimum residency requirements. The minimum number of credits is 45. However, the maximum number of credits to be taken depending on course equivalency.

Environmental Health Major: A student must register in residence at the Faculty of Health Sciences—Environmental Health major for the last three regular terms.

Medical Laboratory Sciences/Medical Audiology Sciences/Medical Imaging Sciences/ Health Communication Majors: A student must register in residence in the major of study for the last four regular terms.

Minors

To graduate with a minor, a student must attain a Minor GPA of 2.3 or more and meet the Faculty›s minor requirements. For more information regarding University minimum requirements for a minor, refer to the General University Academic Information section of the catalogue.

The Faculty of Health Sciences offers three minors, which require the completion of a number of courses as specified in the list below.

Minor in Environmental Health

The minor in Environmental Health introduces students to the environmental system and the interactive processes that affect human health, environmental protection and development. The minor in Environmental Health requires 15 credits, including the following: HPCH 205, ENHL 220, plus a minimum of 9 credits selected from the following ENHL courses: ENHL 221, ENHL 227, ENHL 231, ENHL 234, ENHL 235, ENHL 238 and ENHL 239.

Minor in Public Health

The minor in Public Health introduces students to substantive issues and methodological approaches in public health. Students are given an overview of the field in HPCH 205 and an introduction to epidemiology and biostatistics in EPHD 203. For the remaining courses towards the minor, students can choose from the list of approved electives from across the disciplines of public health according to their interests. A minor in public health allows students to become more aware of the factors influencing health and hence more capable of making choices that influence their own health and that of their communities. In addition, a minor in public health expands students' career options by exposing them to an increasingly important and expanding profession. The minor in Public Health is not open to students majoring in Health Communication.

Students will be required to take:

- HPCH 205 Introduction to Public Health (3 credits)
- EPHD 203 Epidemiology and Biostatistics (3 credits)

The remaining 9 credits may be fulfilled through any combination of the following FHS courses (all courses are 3 credits unless otherwise noted):

Table 1: Elective courses for the Minor in Public Health

Department\Course	GE Societies and Individuals	GE Understanding our World	GE Quant Reasoning
Environmental Health			
ENHL 220: Fundamentals of Environmental Health Sciences		X	
ENHL 221: Management of Domestic and Hazardous Waste			
ENHL 234: Occupational Health			
Epidemiology and Population Health			

EPHD 213 (2 cr.): Survey Methods			X
Health Management and Policy			
HMPD 204: Introduction to Health Services Administration	X		
Health Promotion and Community Health			
HPCH 200: Global Public Health	X		
HPCH 201: Health Awareness and Behavior	X		
HPCH 202 (2 cr.): Sexuality & Public Health	X		
HPCH 210: Health Communication Theory			
HPCH 211: Research Methods			
HPCH 237: Theories & Practice of Health Promotion	X		
Public Health			
PBHL 210: COVID-19, Inequality and Well-Being	X		
HEHI 201: Foundations of Humanitarian Engineering and Public Health Innovations	X		

The list of eligible electives was selected to include courses that cover broad public health content and/or introductory content to a subfield of public health. The student will be expected to develop her/his plan for the minor according to the student's interests and in discussion with the academic advisor.

Minor In Humanitarian Engineering And Public Health Innovations

The Minor in Humanitarian Engineering and Public Health Innovations is offered jointly by the Faculty of Health Sciences and the Maroun Semaan Faculty of Engineering and Architecture.

The minor is open to undergraduate students from all majors. It is a multidisciplinary offering that provides undergraduate students with the knowledge of the humanitarian engineering field, and equips them with the skills required to find innovative design solutions for challenges faced by disadvantaged populations taking into consideration two complementary perspectives; public health perspective and engineering perspective.

Students who complete the minor will be able to:

1. Apply participatory needs assessment tools and analyze the different dimensions of a public health problem
2. Apply formal design methods to develop practical, feasible, scalable, and sustainable humanitarian engineering and public health innovations and interventions
3. Apply skills required to manage complex projects while working in multidisciplinary teams
4. Demonstrate entrepreneurial skills to take a solution/intervention from prototype to product

5. Articulate and adhere to ethical standards in the process followed and in the intervention designed
6. Present and document a problem and its solution to a diverse target audience

The minor in Humanitarian Engineering and Public Health Innovations consists of **15 credits**, according to the following requirements:

- HEHI 201, "Foundations of Humanitarian Engineering and Public Health Innovations"
- HEHI 202, "Capstone: Humanitarian Engineering and Public Health Innovations"
- One design course from the following list: AGSC 330, ARCH 039, ARCH 061, ARCH 064, ARCH 344, BMEN 501, CHEN 471/571, CHEN 619, CHEN 798A, CIVE 552, CIVE 601, CIVE 628, CIVE 686, EECE 461, EECE 560, EECE 675, ENMG 663, ENMG 698E, ENSC 633, ENST 300, FSEC 310, FSEC 315, HPCH 204, HPCH 212, HPCH 237, INFO 205, LDEM 254, LDEM 633, MECH 530, MKTG 234, PBHL 303, URDS 664, URPL 641
- One ethics course from the following list: BUSS 215, INDE 410, MCOM 215, MHRM 304, PHIL 205, PHIL 209, PSYC 305
- One social entrepreneurship course from the following list: AGBU 229, ARCH 068, ENMG 654, ENTM 240, ENTM 320, INDE 412, MFIN 359

Students interested to enroll in the minor are encouraged to inform the coordinators of the program at healthengineering@aub.edu.lb to benefit from adequate advising on study plans and ensure completion of all requirements.

HEHI 201 Foundations of Humanitarian Engineering and Public Health Innovations 3 cr.
This is a multidisciplinary course that covers fundamentals of designing solutions for health challenges faced by disadvantaged populations. It introduces tools for identifying humanitarian and/or development needs and designing practical, scalable and sustainable solutions and interventions. The course is offered to students from all majors. Students will be exposed to health and health system challenges in addition to design fundamentals including participatory needs assessment, formal multidisciplinary design processes, and relevant technologies and tools with real world applications and case studies. Open to students in advanced standing (second and third year for 3 years program and third and fourth year for 4 years program).

HEHI 202 A/B Capstone: Humanitarian Engineering and Public Health Innovations Capstone 3 cr.
The capstone project course is an interdisciplinary service learning design course focused on development and humanitarian engineering solutions for health challenges. In the capstone, students apply all tools learned in HEHI 201. Students work in multidisciplinary teams with disadvantaged communities, under joint supervision of at least two mentors from MSFEA, FHS, and other faculties. The capstone is divided into two sub-courses, HEHI 202A (1cr.) and HEHI 202B (2cr.), and must be registered in 2 consecutive semesters. HEHI 202A has as a prerequisite: HEHI 201. HEHI 202B has as a pre-requisite: HEHI 202A.

Upon prior approval of the students' advisor and the coordinators of the Humanitarian Engineering Initiative, students who are required, as part of their degree requirement, to complete a capstone or final year project, can count that experience towards fulfilling the capstone requirement for the minor.

To graduate with the minor, a student must attain a cumulative GPA of 2.3 or more in courses taken to satisfy its requirements.

Certificate Option

Students can opt for a certificate in Humanitarian Engineering and Public Health Innovations. The "Humanitarian Engineering and Public Health Innovations" certificate requirements are:

- HEHI 201, "Foundations of Humanitarian Engineering and Public Health Innovations"
- HEHI 202, "Capstone: Humanitarian Engineering and Public Health Innovations Capstone"
- An internship approved by the Humanitarian Engineering Initiative of at least 8 weeks full-time

Students should declare the certificate before completing the requirements.

Upon prior approval of the students' advisor and the coordinators of the Humanitarian Engineering Initiative, students who are required, as part of their degree requirement, to complete an internship or practicum, can also count that experience towards fulfilling the internship requirement for the certificate.

General Education Requirements

Please refer to the General Education Requirements section in this catalogue (page 72).

Dual Degree

Students may, upon approval of the faculty concerned, complete the requirements for a second degree while registered in another faculty at AUB. In such a case, a student will be granted two degrees at the same time of graduation. If tuition differs, students will pay the higher of the tuitions. Please refer to the section on General University Academic Information (page 72) for more information.

Academic Rules and Regulations

Please refer to the section on General University Academic Information for information on attendance, classes and laboratories, examinations and quizzes, course loads, premedical requirements, incompletes, probation (placement on academic probation, removal of probation), dismissal and readmission, repeating courses, special students not working for a degree, tutorials and withdrawal from courses.

Full-time Students and Credit Load

A full-time student must carry a minimum load of 12 credits per term. If a student wishes or is forced to reduce her/his load to fewer than 12 credits, s/he must first apply to the UGCA-SA Committee for approval. This should be done no later than 10 weeks after the start of the term.

Students on probation for the first time are allowed a maximum load of 17 credits. Students who continue on probation beyond one term can register for a maximum of 13 credits per term.

Students can normally register for up to 18 credits per term and 9 credits during the summer term. Students who wish to register for more than 18 credits (or 9 credits in summer) must petition the appropriate faculty committee for permission to do so.

Policy on registration of courses during practical training:

At the Division of Health Professions, students are required to abide by the time allocated for the clinical training at AUBMC. Any student registering for a course during that time will be dropped automatically from the course.

Promotion

For class promotion, a student must complete a minimum number of credits per year as listed in the table below. The credits of English 102 or remedial courses are not included.

UG Major	For Class Promotion from Year I to Year II	For Class Promotion from Year II to Year III
EH	30 credits	62 credits
MLS	31 credits	66 credits
MAS	33 credits	68 credits
MIS	39 credits	70 credits
HCOM	32 credits	66 credits

Majorless Status

Students who refrain from following the assigned course curriculum will automatically be given the status of majorless. Majorless students in the Environmental Health program are required to take ENHL 220. Majorless students are given two academic terms to transfer to the desired major. If by the third term the student does not secure acceptance to the desired major, s/he is dropped from the faculty.

Curriculum for Bachelor of Arts in Health Communication

Course Number	Course Title	Lecture Hrs./ Week	Lab Hrs./ Week	Credits
Fall 1				
HPCH 210	Health Communication Theory	2	2	3
EPHD 203	Epidemiology & Biostatistics	2	2	3
HPCH 205	Introduction to Public Health	2	2	3
HPCH 211	Research Methods	2	2	3
ENGL 203	Academic English	3	0	3
Term Credit Total				**15**
Spring 1				
EPHD 213	Survey Methods	1	2	2
HPCH 203	Interpersonal Communication	3	0	3

HPCH 201	Health Awareness & Behavior	2	2	3
MCOM 202	Communication Theory	3	0	3
MCOM 228	Introduction to Digital media	3	0	3
ENGL 204	Advanced Academic English	3	0	3
Term Credit Total				**17**
Fall 2				
HPCH 237	Theories & Practice of Health Promotion	3	0	3
MCOM 215	Media Law and Ethics	1	2	3
ARAB 223	Arabic for the Media	3	0	3
	Societies and Individuals Elective I	3	0	3
HPCH 212	Design & Evaluation of Health Communication Activities	2	2	3
Term Credit Total				**15**
Spring 2				
HPCH 204	Social Marketing	2	2	3
HPCH 207	Risk Communication in Public Health Practice	1	2	2
	Cultures and Histories (History of Ideas) Elective I	3	0	3
	Culture and Histories Elective II	3	0	3
	Understanding The World Elective I	3	0	3
	Arabic Communication Elective	3	0	3
Term Credit Total				**17**
Summer				
HPCH 250	Practicum	-	-	2
Term Credit Total				**2**
Fall 3				
HPCH 200	Global Public Health	3	0	3

HPCH 208	Advocacy and Activism for Social Change	2	2	3
	Free Elective	1	2	2
MCOM 246	Digital and Multimedia News	3	0	3
MCOM 247	Trauma Journalism	3	0	3
Term Credit Total				**14**
Spring 3				
HPCH 215	Project Management Skills	1	2	2
	Understanding the World Elective II	3	0	3
	Societies and Individuals Elective II	3	0	3
	Culture and Histories Elective III	3	0	3
HPCH 209	Digital Health for Public Health	1	2	2
HPCH 251	Capstone Seminar	0	2	2
Term Credit Total				**15**
Total Credits				**95**

Curriculum for Bachelor of Science in Environmental Health

Course Number	Course Title	Lecture Hrs./ Week	Lab Hrs./ Week	Credits
Fall 1				
BIOL 200	Diversity of Life	2	2	3
CHEM 208	Brief Survey of Organic Chemistry	2	2	3
CHEM 209	Introductory Organic Laboratory	2	2	3
ENGL 203	Academic English	2	2	3
ENHL 220	Fundamentals of Environmental Health Sciences	3	0	3
Term Credit Total				**15**

Spring 1				
ENHL 221	Management of Domestic and Hazardous Wastes	3	0	3
ARAB 2xx	Understanding Communication (Arabic)	3	0	3
ENGL 204	Advanced Academic English	3	0	3
ENHL 227	Environmental Microbiology	2	2	3
	Cultures and Histories – History of Ideas	3	0	3
Term Credit Total				**15**
Fall 2				
ENHL 231	Water and Wastewater Quality Control	3	0	3
ENHL 232	Instrumentation, Analytical Techniques and Sampling	3	1	3
ENHL 238	Indoor and Outdoor Air Pollution	3	0	3
EPHD 203	Epidemiology and Biostatistics	2	2	3
EPHD 203A	Biases in Epidemiology	1	0	1
	Cultures and Histories Elective	3	0	3
Term Credit Total				**16**
Spring 2				
ENHL 233	Quality Determination of Water and Wastewater	2	2	3
ENHL 234	Occupational Health	2	2	3
ENHL 235	Toxicology and Risk Analysis	3	0	3
ENHL 239 or NFSC 282	Food Safety	3	0	3
EPHD 213	Survey Methods	1	2	2
	Societies and Individuals Elective	3	0	3
Term Credit Total				**17**

Fall 3				
ENHL 242	Environmental Management Tools and Applications	3	0	3
HMPD 204	Introduction to Health Services Administration	3	0	3
HPCH 237	Theories and Practices of Health Promotion	3	0	3
	Free Elective	3	0	3
PHIL 209	Environmental Ethics	3	0	3
Term Credit Total				**15**
Winter 3				
ENHL 236	Practicum	-	-	3
Term Credit Total				**3**
Spring 3				
ENHL 243	Global Environmental Issues	3	0	3
	Free elective	3	0	3
	Free elective	3	0	3
ENHL 245	Environmental Economics	3	0	3
	Cultures and Histories Elective	3	0	3
Term Credit Total				**15**
Total Credits				**96**

Curriculum for Bachelor of Science in Medical Imaging Sciences

Course Number	Course Title	Lecture Hrs./ Week	Lab Hrs./ Week	Credits
Fall 1				
MIMG 201	Introduction to MIS	2	0	2
ENGL 203	Academic English	3	0	3
ARAB 2XX	Understanding Communication (Arabic)	3	0	3

	Cultures and Histories (History of Ideas)	3	0	3
HUMR 246	Human Morphology	2	2	3
PSYC 201	Introduction to Psychological Sciences	3	0	3
Term Credit Total				**17**
Spring 1				
MIMG 206	Principle of Imaging I	3	0	3
MIMG 206L	Principle of Imaging I Laboratory	0	4	2
ENGL 204	Advanced Academic English	3	0	3
NURS 201	Introduction to Nursing Practice	1	3	2
PHYL 246	Physiology	4	0	4
PHYS 205	Modern Physics	3	0	3
Term Credit Total				**17**
Summer 1				
MIMG 202	Imaging Physics	3	0	3
DGRG 220	Clinical Practicum I	0	8	2
Term Credit Total				**5**
Fall 2				
MIMG 203	Medical Imaging Equipment I	3	0	3
MIMG 207	Principle of Imaging II	3	0	3
EPHD 203	Epidemiology & Biostatistics	2	2	3
	Cultures and Histories Elective	3	0	3
DGRG 230	Clinical Practicum II	0	15	4
Term Credit Total				**16**
Spring 2				
MIMG 204	Medical Imaging Equipment II	3	0	3

MIMG 205	Introduction to Principles of Diseases	3	0	3
MIMG 208	Sectional Anatomy	3	0	3
EPHD 213	Survey Methods	1	2	2
DGRG 240	Clinical Practicum III	0	8	2
Term Credit Total				**13**
Summer 2				
DGRG 250	Clinical Practicum IV	0	8	2
Term Credit Total				**2**
Fall 3				
MIMG 210A	Research Project I	3	0	0
HMPD 204	Introduction to Health Services Administration	3	0	3
PHIL 205	Bio Medical Ethics	3	0	3
	Societies and Individuals Elective	3	0	3
HPCH 203	Health Communication	3	0	3
DGRG 260	Clinical Practicum V	1	15	4
Term Credit Total				**16**
Spring 3				
MIMG 209	Quality Management & Image Analysis	3	0	3
MIMG 210B	Research Project II	3	0	3
	Cultures and Histories Elective	3	0	3
	Free Elective	3	0	3
DGRG 270	Clinical Practicum VI	0	15	4
Term Credit Total				**16**
Total Credits				**102**

Curriculum for Bachelor of Science in Medical Laboratory Sciences

Course Number	Course Title	Lecture Hrs./ Week	Lab Hrs./ Week	Credits
Fall 1				
BIOL 201	General Biology I	3	3	4
CHEM 208	Brief Survey of Organic Chemistry	3	0	3
CHEM 209	Introduction Organic Laboratory	1	4	2
ENGL 203	Academic English	3	0	3
	Cultures and Histories (History of Ideas)	3	0	3
Term Credit Total				**15**
Spring 1				
ARAB 2xx	Understanding Communication Arabic	3	0	3
BIOC 255	Biochemistry for MLSP	3	0	3
ENGL 204	Advanced Academic English	3	0	3
PHYL 246	Physiology for Nursing Degree Students and Undergraduates	4	0	4
	Cultures and Histories Elective	3	0	3
Term Credit Total				**16**
Fall 2				
LABM 201	Clinical Chemistry I	2	0	2
MLSP 201	Clinical Hematology I	3	0	3
MLSP 203	General Microbiology	2	4	3
MLSP 207	Immunology and Blood Banking	2	0	2
MLSP 208	General and Diagnostic Virology	2	0	2
	Societies and Individuals Elective	3	0	3
	Cultures and Histories Elective	3	0	3

Term Credit Total				**18**
Spring 2				
LABM 202	Clinical Chemistry II	3	0	3
LABM 210	Cytology and Histological Techniques	2	0	2
MBIM 223	Parasitology for MLS students	2	2	4
MLSP 202	Clinical Hematology II	3	0	3
MLSP 204	Systematic Bacteriology	3	5	4
MLSP 259	Diagnostic Serology	1	0	1
Term Credit Total				**17**
Summer 2				
	Practical Training in Laboratory Medicine	-	-	4
Term Credit Total				**4**
Fall 3				
EPHD 203	Epidemiology and Biostatistics	2	2	3
HMPD 204	Introduction to Health Services Administration	3	0	3
LABM 233	Genetics and Molecular Biology	2	0	2
LABM 235	Medical Mycology	1	0	1
	Practical Training in Laboratory Medicine	-	-	8
Term Credit Total				**17**
Spring 3				
PHIL 205	Bio-Medical Ethics	3	0	3
HPCH 203	Health Communication	3	0	3
LABM 231	Clinical Laboratory Quality Systems	1	0	1
MLSP 211	Seminar	1	0	1
	Practical Training in Laboratory Medicine	-	-	8
Term Credit Total				**16**
Term Credits				**103**

Practical Training in Laboratory Medicine

The practical training in Laboratory Medicine covers practical experience and application of theoretical knowledge in the following areas of laboratory medicine for the credits indicated below:

Course Number	Course Title	Credits
LABM 220	Clinical Chemistry and Endocrinology	4
LABM 230	Clinical Hematology and Reception	4
LABM 240	Clinical Microbiology	4
LABM 250	Clinical Parasitology and Urinalysis	2
LABM 260	Serology	2
LABM 270	Blood Banking	2
LABM 280	Cytogenetics, Molecular Diagnosis and Histotechniques	2

Interdisciplinary courses

PBHL 210 COVID-19, Inequality and Well-Being 3.0; 3 cr.
This course will introduce students to the COVID-19 pandemic as both a global and regional public health crisis, with a focus on prevention, mitigation and impact. Geographically, it would focus on low and middle-income countries across the Global South and with a particular emphasis on the Arab region. The course will offer an intersectional analysis of the structural inequalities exposed by COVID-19, both in terms of differential vulnerability to and consequences of the pandemic by gender, age, socio-economic class, ethnicity, race and immigrant/refugee status. Drawing on recent research by FHS and AUB faculty members, lectures will examine some of the historical, economic, epidemiological/health sector and social aspects of the pandemic and explore policy responses across various contexts. The course will additionally address the myriad gendered consequences of lockdown measures adopted to combat the pandemic, such as poor mental health outcomes, the rise in gender-based violence, disruptions to education and loss of income, among others. Focusing on Lebanon as a case study, the course will also analyze the impact of the concomitant public health and economic crises on the health sector, exploring the burden on fragile health systems as well as the diversion of already-precarious healthcare resources from “non-essential” services.

Department of Environmental Health

Chairperson:	Jurdi, Mey
Professors:	Habib, Rima; Jurdi, Mey; Massoud, May; Nuwayhid, Iman
Associate Professor:	Dhaini, Hassan
Lecturer:	Nasr, Joumana
Instructor:	El Helou, Nida

The Department of Environmental Health offers a three-year undergraduate program in environmental health, which is accredited by the United States Council on Education for Public Health (CEPH). Students are admitted to the department after the completion of the freshman science program or its equivalent and are awarded a Bachelor of Science degree upon graduation. The curriculum provides a broad education in basic sciences and fundamental knowledge of environmental health. Emphasis is placed on the evaluation and control of major environmental health problems in developing and developed countries in such fields as indoor and outdoor air pollution, water, sanitation and hygiene, food safety, risk analysis, municipal and hazardous waste, occupational health and safety, environmental impact assessment and audits, climate change and sustainable development. During their senior year, students in the program are also given the opportunity to complete an internship in pre-approved work settings, thus providing them with the opportunity to supplement their theoretical and laboratory experience with real-life practical field experience. Moreover, as part of the program, students are also required to take public health courses in epidemiology and biostatistics, health management and health promotion, which facilitates acquiring a minor in Public Health (refer to Minor Policy page 72). Additionally, students can follow a pre-medical track, if interested in joining the medical school.

Due to increased environmental concerns, Lebanon and countries in the region are in great need of qualified personnel capable of planning and implementing policies, strategies and programs to enhance human health and ecological vitality. This provides great job opportunities in various sectors, such as public/governmental agencies, international organizations, private companies, non-governmental organizations and academic/research institutions.

Course Descriptions

ENHL 105 Environment and Health 3.0; 3 cr.
A course that exposes the students to major local and global environmental issues relating to air, water, land and energy and the importance of proper integrated management to promote and protect public health and achieve sustainable development. In addition, the course highlights the importance of environmental laws and policies as major tools in the management of environmental health issues. Environmental ethics is also emphasized as a critical core factor of the management processes. The importance of environmental awareness of different stakeholders is exposed as a means to achieve proposed objectives. Open to freshman students only.

ENHL 220 Fundamentals of Environmental Health Sciences 3.0; 3 cr.
A course that explores the interdisciplinary nature of environmental health sciences. It explains fundamental scientific concepts relating to the various environmental components and focuses on the relationship between the environment and human health. Using case studies and critical thinking exercises, the course covers a variety of topics including air, water and soil pollution, energy, waste management, climate change, biodiversity and sustainable development. It also highlights the relationship between population growth, economics, politics, ethics and the environment.

ENHL 221 Management of Domestic and Hazardous Wastes 3.0; 3 cr.
A course that introduces the elements of solid waste management: sources, characterization, generation rates, collection, transportation, and disposal technologies. Concepts are presented within the context of integrated management: reduction, reclamation, recycling, and disposal. Socioeconomic implications at the community and national levels are emphasized. Pre or co-requisite: ENHL 220.

ENHL 227 Environmental Microbiology 2.2; 3 cr.
A course that introduces students to the microbial world and relates microbiology to environmental issues and community health. It explores the fundamentals of bacteriology, virology, and parasitology and covers infectious diseases transmitted through air, water, food, soil, municipal solid wastes, and wastewater. It covers topics such as microbial environments, detection of microorganisms and their activities in the environment, industrial microbiology, and bioremediation. Pre or co-requisites: BIOL 200/201 and ENHL 220.

ENHL 231 Water and Wastewater Quality Control 3.0; 3 cr.
A course that focuses on the principles of water management (both in quantity and quality) with emphasis on fresh water resources for domestic and multi-purpose utilization. Characterization, treatment, reclamation, and recycling of wastewater are also discussed. National and international guidelines, standards, and directives for water and wastewater management are presented. Prerequisites: ENHL 220 and ENHL 227.

ENHL 232 Instrumentation, Analytical Techniques and Sampling 3.1; 3 cr.
A course that focuses on the basic concepts and application of different sampling methods, and instrumental and analytical techniques: electrical conductance, absorption spectrophotometer (visible, ultraviolet light, infrared, atomic absorption), emission (flame photometry) and chromatography (gas chromatography, high performance liquid chromatography, ion chromatography). Prerequisite: ENHL 220.

ENHL 233 Quality Determination of Water and Wastewater 2.2; 3 cr.
A course that focuses on the quality determination (physical, chemical, biochemical, and microbiological) of water and wastewater samples using standard analytical techniques. Students are required to write professional quality assessment reports. Proper presentation and interpretation of results and practical recommendations for preventive or corrective measures are emphasized. Prerequisites: ENHL 220, ENHL 231 and ENHL 232.

ENHL 234 Occupational Health 2.2; 3 cr.
A course that provides an overview of the general principles of occupational health using a multidisciplinary framework. Applying diverse perspectives, students of the class will learn about hazards in the workplace and the health, economic, political, social, and societal ramifications of occupational health and safety. The course offers a dynamic learning environment that emphasizes critical thinking and engagement. Students will learn by applying research and readings to case studies, media analysis, and in-class discussions. Prerequisite: ENHL 220.

ENHL 235 Toxicology and Risk Analysis 3.0; 3 cr.
A course that introduces students to the principles of toxicology (exposure to toxicants and their absorption, distribution, metabolism, and excretion), selected toxic chemicals, and the impact of toxicants on selected human organs and systems. It also introduces students to the application of toxicology in public health, namely dose-response and causal relationships, risk assessment, management, and communication including the process of setting environmental standards. Prerequisites: ENHL 220, BIOL 200/201, (CHEM 208 and CHEM 209) or (CHEM 211 & CHEM 212 & CHEM 210).

ENHL 236 Practicum 3 cr.
This is a required course for Environmental Health students providing them with an opportunity to supplement their theoretical and laboratory experience with a real-life practical field experience. Students are assigned to environmental projects and challenges in pre-approved work settings in the public sector, private sector (industries, consulting firms), academic and research centers, UN agencies, or international and national NGOs. Students will address current environmental issues supervised by environmental practitioners. Wherever feasible, practicum sites will be assigned to meet the student's long term academic and career objectives. The experience will sharpen the student's writing, technical and analytical skills in a supervised setting and develop the skills to conceive of and successfully complete a well-defined project within a limited time frame. Prerequisites: Completion of all the ENHL courses of the first two and a half years. ENHL 242.

ENHL 238 Indoor and Outdoor Air Pollution 3.0; 3 cr.
A course that discusses exposure and health effects of indoor (e.g., asbestos, tobacco smoke, formaldehyde, radon) and outdoor air pollutants. Students are introduced to modeling, quality determination, and management strategies. This course includes a "service learning" component through which students will engage with a predetermined organization to identify and address a public health problem. This opportunity will allow students to "share" and "receive" knowledge and expertise leading to enhanced learning among students and benefit to the chosen organization. Prerequisites: ENHL 220 and CHEM 208, or (CHEM 211 and CHEM 212) (could be taken concurrently).

ENHL 239 Food Safety 3.0; 3 cr.
A course that focuses on food safety from production to consumption (preparation, processing and preservation, storage, marketing and trading). Emphasis is placed on the development, implementation and appraisal of food safety management systems and certification schemes (such as GHP, GMP, HACCP, ISO 22000 and FSSC) at the national and international levels. Prerequisites: ENHL 220, ENHL 227 and CHEM 208. The course is equivalent to NFSC 282.

ENHL 242 Environmental Management Tools and Applications 3.0; 3 cr.
A course that provides an overview of the general principles relating to environmental management tools and applications. Topics covered include environmental impact assessment, environmental auditing, and environmental regulations and standards. To provide students with practical experience, they are requested to conduct a community-based environmental health project. Emphasis is placed on investigating the problem and proposing management strategies. Senior standing required. Prerequisites: ENHL 221, 233, 234, 235, 238, (ENHL 239 or NFSC 282).

ENHL 243 Global Environmental Issues 3.0; 3 cr.
Global environmental problems such as climate change, water shortage, floods, fires, depletion of stratospheric ozone, and the loss of biodiversity have captured news headlines and the attention of the public. These developments are transnational, in that their impact is felt across national boundaries and effective responses require coordinated efforts transcending any individual state. The establishment of conventions and institutions facilitating international cooperation reflect this reality, yet the success of these efforts has been frequently inadequate and criticized as favoring the powerful over the disenfranchised. This course engages students in a review of global environmental issues affecting the Arab

region and beyond. This review will explore research on the history and causes of these environmental problems, giving special attention to their framing in public discourse. The ecological, social, economic, political, cultural, and health aspects of the environmental problems are discussed in a debate format. The local, national, and international efforts to develop strategies to address these problems are also raised. Prerequisite: ENHL 242.

ENHL 245 Environmental Economics 3.0; 3 cr.
A course that introduces the principles of economics and its use as a tool to analyze and value the environment by providing a quantitative measure that can guide policy. The course focuses on the cost of environmental pollution and degradation in contrast to the economic value of conservation, environmental amenities (such as clean water, air, and soil) and environmental mitigation and remediation. Prerequisite: ENHL 220.

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (6)**	**Understanding the World (12) Quantitative Reasoning (6)**	**Major Courses (42)**	**Community-Engaged Learning (3)**
Lecture Course (9+12 +6+ 12+6+ 42+3)	Required Arabic Course (3) Required English Courses: ENGL 203 (3), 204 (3)	Cultures and Histories electives (9) Phil 209 (3)	HPCH 237(3) Elective (3)	ENHL 220 (3) BIOL 200(4) CHEM 208(3) EPHD 203(3) EPHD 213(2) EPHD 203A(1)	ENHL 220 (3), 227(3), 221(3), 239(3), 231(3), 232(3), 233(3), 234A(3), 235(3), 238(3), ENHL 242(3), 243(3), 245(3)	HMPD 204 (3)
Lab (4+4)				BIOL 200(4) CHEM 209(2)	ENHL 232(3), 234A(3), 233(3), 227(3)	
Seminar (2)					ENHL 242(3), 243(3)	
Research Project (1+3)					ENHL 242(3), 243(3)	
Field-work					ENHL 236(3)	

Students take, in addition to the required courses above, 9 free elective credits in various fields and modes of analysis.

Department of Epidemiology and Population Health

Chairperson:	Chaaya, Monique
Professors:	Chaaya, Monique; DeJong, Jocelyn; Sibai, Abla
Professor of Public Health Practice:	Adib, Salim
Associate Professors:	Ghandour, Lilian; Jaffa, Miran
Associate Professor of Public Health Practice:	Fouad, Fouad
Assistant Professors:	El Asmar, Khalil; Mumtaz, Ghina
Assistant Professor of Public Health Practice:	McCall, Stephen
Instructors of Public Health Practice:	Akl, Christelle; Saad, Ghada
Affiliates:	Akl, Elie; El Bejjani, Martine; Tamim, Hani
Adjunct:	Al Hazoury, Adina

EPHD 203 Epidemiology and Biostatistics 2.2; 3 cr.
An introductory course offered to undergraduates covering the basic principles of Epidemiology and Biostatistics. This course introduces students to the types and sources of epidemiological data, common measures of morbidity and mortality, the design and analysis of various epidemiological study designs and the main biases and issues that threaten data validity. The course also covers exploratory data analysis, and introduces students to statistical techniques commonly used in the analysis of epidemiological data. The students will learn how to run basic statistical analyses on SPSS and interpret statistical output. The lab sessions for the epidemiology sessions will be in the form of discussion of practice questions or articles, and computer lab sessions will mainly introduce students to statistical analysis using the statistical package SPSS.

EPHD 203A Biases in Epidemiology 1.0; 1 cr.
This course is open only to undergraduate students enrolled in the Environmental Health program. In this course, the students will be further exposed to all potential types and sources of bias in epidemiological research and ways to avoid them. These concepts will be illustrated via the discussion of weekly readings. The class will engage the students in team activities and group discussion. Corequisite: EPHD 203.

EPHD 213 Survey Methods 1.2; 2 cr.
A course that provides students with a general overview of the principles and stages of survey research. Using secondary data, students will learn to review and synthesize the literature relevant to a particular research question, analyze and summarize the data, as well as present the findings in an oral and written format. Students will also have the opportunity to develop short questionnaires, sample respondents, collect primary data, and enter data on SPSS as part of their course assignments. Throughout the course, students will learn of the main ethical issues that arise through the different research stages. Prerequisites: EPHD203 or consent of instructor.

Department of Health Promotion and Community Health

Chairperson:	Makhoul, Jihad
Professors:	Abdulrahim, Sawsan[2] ; Makhoul, Jihad
Associate Professor:	Kabakian-Khasholian, Tamar
Assistant Professor:	Sieverding, Maia
Senior Lecturer:	El Kak, Faysal[3]
Instructors of Public Health Practice:	Kalot, Joumana; Najem, Martine
Lecturers:	Al Barazi, Rana[3]; Kanj, Mayada; Khawam, Grace
Instructor:	Maddah, Diana[3]
Research Affiliate:	Salloum, Ramzi

The Department offers a three-year Bachelor of Arts (B.A.) degree in Health Communication (HCOM) and a Master of Public Health (MPH) degree in Health Promotion and Community Health (HPCH).

The HCOM program prepares undergraduate students to develop, deliver, and evaluate health communication tools and activities; and to communicate health information to diverse audiences. Students enrolled in the program will receive most of their disciplinary training in the HPCH Department but will also take courses in the Media Studies Program at the Faculty of Arts and Sciences (FAS). HCOM courses are designed to train students in Public Health theory and methods; planning, managing and evaluating health communication; and communicating health messages to audience of interest.

The HPCH Department also contributes to teaching courses in other undergraduate programs in the Faculty of Health Sciences and in a Teaching Diploma in Health Education with the Department of Education at the Faculty of Arts and Sciences.

Course Description

HPCH 200 Global Health 3.0; 3 cr.
The course presents an overview of global public health through a multidisciplinary approach. This will be accomplished through readings and other materials from public health, the social sciences, and the humanities on global public health issues, as well as through learner-centered class activities and writing assignments. The course will trace the origins of global health as a field and analyze the role of different international, national, and local actors in current global health issues. Throughout the semester, students will examine case studies

[2] Leave without pay
[3] Part timer

of current global health challenges, identify their social, economic, and political causes, and discuss approaches and policies that ensure health, equity, and social justice. Not open to sophomores and first year students in all faculties.

HPCH 201 Health Awareness and Behavior 3.0; 3 cr.
This course in health awareness and behavior introduces students to modern concepts and understanding of holistic health and dimensions of health and wellness. It aims to provide students with up-to-date knowledge on contemporary health issues to help shape their perceptions, attitudes, and behaviors, that will ultimately lead to higher levels of health and wellness, and reduce vulnerability to illness and disability, within a framework of human rights. This is achieved through a dynamic and interactive classroom setting engaging students in critical assessment around their attitude, knowledge, and lifestyle behaviors. The course will encourage students to participate in open class discussions, material presentations, class debates around issues related to students' health perceptions, daily health habits, behavior, and national and global public health matters. Ultimately, students are expected to examine their attitudes toward health issues, encouraged to engage in health behavioral change, to reinforce/promote a healthier lifestyle, and make informed decisions that will not only prevent or delay the onset of certain health conditions but also promote holistic health and wellness.

HPCH 202 Sexuality and Public Health 2.0; 2 cr.
This course aims to provide students with an overview of sexuality and sexual health and its dimensions within a framework of human rights. Through discussions, lectures and assignments, students will learn about the evolution of sexuality and sexual health within the global perspective with specific focus on the public health aspect. It will look into the interaction between the biological, social-cultural and health/medical aspects of sexuality and the current discourses surrounding sexuality in Lebanon and the Region. Some of the issues include: (1) Development of sexuality and sexual & gender identities, (2) Sexual and reproductive health aspects, (3) Sexual identities and sexual rights debates (4) Sexuality expressions/behaviors and public health, (5) Safe sex and sexual violence.

HPCH 203 Interpersonal Communication 2.2; 3cr.
This course is an introduction to human communication theory and practice. It emphasizes both interpersonal and group communication skills. The course introduces students to assumptions we make about communication and key elements of the communication process. The course attempts to highlight the connection between communication concepts and everyday life by using interactive methods that allow students to experience concepts in relation to their own lives.

HPCH 204 Social Marketing 2.2; 3cr.
How can we influence people's behaviors, such as wearing masks, getting a vaccine jab, observe physical distancing, screening for cancer, or even voting? Can we 'sell' healthy eating, tooth brushing, recycling, the same way corporations sell their products? Social Marketing is a discipline that can answer these questions (and many more) to address a broad range of health, environment, political, and social issues. Social marketing "seeks to develop and integrate marketing concepts with other approaches to influence behaviors that benefit individuals and communities for the greater social good"1. Social marketing requires soul and heart. In this course, you will learn how to apply the basic concepts of Social Marketing into strategic plans aimed to address 'wicked problems' affecting local communities. Prerequisites: HPCH 210, HPCH 212 and MCOM 202.

HPCH 205 Introduction to Public Health 2.2; 3cr.
This course is intended to introduce undergraduate students in the Health Communication Program to basic concepts, disciplines and principles of Public Health. Students learn how biological, environmental, social, economic, and political factors are intimately related to

health, health care and illness. The course incorporates a critical perspective on contemporary health challenges. Most sessions include a common lecture and Moodle forums on case studies from the world, particularly the Arab region.

HPCH 207 Risk Communication in Public Health Practice 1.2; 2cr.
In this course students will learn the basic concepts of risk communication and its applications in public health. This course will cover the basic principles of theories of risk perception (e.g., Prospect Theory) and discuss their applications in public health incidents responses. We will include elements of risk message framing, public engagement, using traditional and social media, as well as ethical considerations of public communication. At the end of this course, students will be able to apply these concepts to design messages to convey risk information in public health by producing messages in various formats, including fact sheets, press releases, video scripts, text messages, and media kits. The final presentation will consist of a mock press conference on a pre-determined topic. Prerequisites: HPCH 210 and HPCH 212

HPCH 208 Advocacy and activism for Social Change 2.2; 3cr.
In this course, students are exposed to the art and science of advocacy in public health. The course covers the basic elements of an effective evidence-based advocacy process, including defining the issue, defining the audiences and crafting advocacy messages. Students work in groups to develop an advocacy tool, such as a newspaper article, a letter of complaint, or a policy statement for an advocacy project addressing a public health issue of relevance to Lebanon or a country of the region. Prerequisites: HPCH 204 and 207.

HPCH 209 Digital Health for Public Health 1.2; 2cr.
Social media mobile apps and artificial intelligence (AI) have become ubiquitous in nearly all aspects of our lives. These technologies are changing the ways healthcare providers interact with and deliver care to their clients. Digital technologies have also changed the way researchers design and implement health promotion and intervention programs, and the way consumers gather health information and make health decisions. This course is designed to introduce students to eHealth, which encompasses the use of digital technologies to deliver healthcare programs and to promote health among different publics. eHealth or digital health encompasses, telehealth (telecare, telemedicine, tele-coaching, tele-rehab), technology-enabled care services, mobile apps, and social media for health promotion campaigns. Prerequisites: HPCH 210, 212, MCOM 228 and 246.

HPCH 210 Health Communication Theory 2.2; 3cr.
In this course you will learn the main theoretical frameworks and tools applied in health communication. You will discover how these frameworks can be used to analyze problems and diffuse health-related content among various stakeholders in different contexts and settings. A relevant part of this course will discuss the use of communication for health information dissemination and doctor-patient communication, and the politics of health care. Through examples and realistic scenarios, you will learn health communication by doing health communication.

HPCH 211 Research Methods 2.2; 3cr.
This course is an introduction to methodologies for research used in health communication, including both quantitative and qualitative methods. Students will learn how to frame questions, review scientific literature, select appropriate designs and methods to measure knowledge, attitudes and behavior, and analyze data to guide communication strategies. Students are provided with opportunities to apply various methods of data collection and analysis to interpret research findings for decision-making about health communication activities and programs.

HPCH 212 Design and Evaluation of Health Communication Activities 2.2; 3cr.
In this course, students learn how to plan, implement, and evaluate health communication activities, starting with the health-related needs assessment in the community to determine priority areas for health promotion. Based on these areas, students go through the process of developing objectives, selecting appropriate activities, and implementing and evaluating an activity. Prerequisites: HPCH 210, HPCH 211 and EPHD 213.

HPCH 215 Project Management Skills 1.2; 2cr.
This course aims to familiarize students with basic concepts and terminology in project management. Many health communication activities are implemented using projects and project teams. This course introduces students to the core concepts and skills for managing these projects effectively; ensuring they are completed on time, within budget, and meeting performance objectives. This course aims to familiarize students with basic concepts and terminology in project management. It provides an overview of the project life cycle starting from rationale, writing project objectives, developing activities and action plan which includes a budget break-down. The course will also introduce students to how they can set indicators to monitor and evaluate project activities. Prerequisite HPCH 250.

HPCH 237 Theories and Practice of Health Promotion 3.0; 3 cr.
This course introduces students to a range of health promotion theories that address multiple level determinants of health and illness. Current public health challenges will be discussed to enhance understanding of how determinants at the individual, organizational, community and sociopolitical levels interact and contribute to health risks and outcomes. The course emphasizes an ecological approach and the health promotion principle of enabling people to increase control over their health. Readings and class discussions advocate for equitable policies and social justice.

HPCH 250 Practicum 2cr.
This course provides students with the opportunity of gaining field experience in the development, implementation, and/or evaluation of health communication activities or programs. At the end of the second year of the program, students will be placed at a site where they will be able to apply knowledge and theory learned through their courses. They will engage in an ongoing health communication project or health communication activities of certain projects by undertaking specific tasks under the supervision of a field preceptor and upon the approval of the course coordinator. Students who have completed all first- and second- year HCOM required courses are eligible to enroll in the practicum. Prerequisites: HPCH 204 and 207

HPCH 251 Capstone seminar 0.2; 2cr.
This seminar is taken during the last semester of the BA in Health Communication program. It is closely linked to the summer internship where students are required to complete it between their second and third year. The course is designed to challenge students to critically reflect on the knowledge they have gained in all their prior coursework and then synthesize that knowledge with field experience, with a focus on the role of health communication in contributing to public health in Lebanon. The course provides students with the opportunity to further develop the full set of competencies essential for a health communication graduate. It also provides them time and space to sharpen their leadership and other professional skills, as well as demonstrate independent thinking and respect for diversity. Prerequisites: HPCH 209 (concurrent) and HPCH 250.

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (12), Human Values (3)**	**Societies and Individuals (6)**	**Understanding the World (6) Quantitative Reasoning (5)**	**Major Courses (55+2 +2)**	**Community-Engaged Learning (3)**
Lecture Course (9+15 +6+11 +55+2 +2+5)	Required Arabic course (3); Required English courses: ENGL 203 (3), 204(3)	12 credits in Cultures and Histories MCOM 215 (3)	Societies and Individuals (6)	Understanding the world electives (6) EPHD 203(3) EPHD 213 (2)	HPCH 200(3); HPCH 201(3); HPCH 203(3); HPCH 204(3); HPCH 205(3); HPCH 207(2); HPCH 208(3); HPCH 209(2); HPCH 210(3); HPCH 211(3); HPCH 212(3); HPCH 215(2); HPCH 237(3); MCOM 202(3); MCOM 215(3); MCOM 246(3); MCOM 247(3); MCOM 228(3)	HPCH 204 (1); 207 (1); 208 (1)
Lab (3)				EPHD 203(3) EPHD 213 (2)		
Seminar (2)					HPCH 251(2)	
Field-work					HPCH 250(2)	HPCH 250 (2)

Department of Health Management and Policy

Chairperson:	Kassak, Kassem
Professors:	El-Jardali, Fadi; Saleh, Shadi
Associate Professor of Public Health Practice:	Kassak, Kassem
Instructor:	Germani, Aline
Instructors of Public Health Practice:	Abou Samra, Clara; Bou Karroum, Lama; Fadlallah, Racha; Jamal, Diana

Departmental courses are designed to introduce students to the principles and practices in the field of health management and policy, with an emphasis on managerial functioning in healthcare organizations. The department offers a few undergraduate courses in health administration and contributes to courses catered to major and minor programs.

Course Description

HMPD 204 Introduction to Health Services Administration 3.0; 3 cr.
This course offers an in-depth examination of the diverse components that form a health system. It provides an opportunity to describe and analyze how provider settings, health care personnel, financial resources, technology, and the government interact to meet and serve the health care needs of populations. This course includes a "service learning" component through which students will engage with a predetermined organization to identify and address a public health problem. This opportunity will allow students to "share" and "receive" knowledge and expertise leading to enhanced learning among students and benefit to the chosen organization. Not open to sophomores and first year students in all faculties.

Division of Health Professions

Director:	Melhem, Nada
Executive Committee:	Hannoun, Salem (MIS Program Coordinator) Melhem, Nada (MLS Program Coordinator)

The Division of Health Professions at the Faculty of Health Sciences hosts a joint program in health professions between the Faculty of Health Sciences and Faculty of Medicine. The program offers three majors: Medical Audiology Sciences (MAS), Medical Imaging Sciences (MIS) and Medical Laboratory Sciences (MLS).

Mission

The Division of Health Professions, run jointly by the Faculty of Health Sciences and the Faculty of Medicine, provides excellent educational curricula in all its majors with intensive

hands-on training, preparing students to deliver outstanding health services to the patient and community. The Division conducts creative research linked to clinical medicine and public health. The Division adheres to ethical values and promotes quality care with dignity and respect.

Vision

The Health Professions Division is a leading program in the region, preparing innovative and versatile health professionals who impact health and advocate patient rights.

Program of Medical Audiology Sciences[4]

This program is run in coordination with the Department of Otolaryngology Head and Neck Surgery at the Faculty of Medicine. The mission of the Medical Audiology Sciences (MAS) Program is to prepare students for a successful career in audiology by providing them with a foundation in liberal arts education, coupled with a high-quality clinical education that is underpinned by the fundamental sciences of audiology and a rigorous scientific approach. The academic program is designed to produce skilled clinicians who follow professional standards and ethical principles while serving individuals with hearing or balance disorders in Lebanon and the region. Through various professional and community service activities, the program strives to build in its students the importance of continuing education, developing leadership skills, as well as advocating and supporting the needs of all persons with hearing and vestibular disorders. The mission of the program is consistent with the mission of the institution in that it stresses the importance of providing academic excellence in teaching and research, inspiring students to become leaders in their professional field, as well as helping students develop a lifelong sense of learning and civic responsibility.

To graduate, all students must obtain a minimum grade of C+ in each of ORLG 220, 230, 240 and 250 and a cumulative GPA of 2.3 in the major field of study.

Course Description

MAUD 200 Overview of Audiology and Clinical Practice 1.0; 1 cr.
This course is designed to acquaint the student with the profession of audiology and requirements for clinical practice. Students will complete 25 clinical observation hours. First term.

MAUD 201 Anatomy and Physiology of the Auditory - Vestibular System 3.0; 3 cr.
An in-depth coverage of anatomy and physiology of the auditory and vestibular systems. First term. Prerequisite: PHYL 246 or BIOL 202.

MAUD 202 Basic Audiological Procedures 2.2; 3 cr.
A detailed consideration of the rationale, development, and psychoacoustic theory behind pure tone audiometry, speech audiometry, and clinical masking. Acoustic immittance will also be covered. Students will learn to perform and interpret basic audiological procedures and master clinical masking through hands-on training and software-based activities. First term. Pre- or corequisite: MAUD 200 or consent of instructor.

MAUD 203 Pediatric Audiology 3.0; 3 cr.
This course surveys methods and procedures used in the evaluation and management of auditory function in neonates, infants, and young children. It includes identification and intervention procedures. There will be a review of special populations of children with hearing loss. Development of early hearing loss detection and intervention programs will be discussed. First term. Pre- or corequisite: MAUD 201.

[4] Frozen

MAUD 204 Acoustics, Psychoacoustics, and Instrumentation 2.2; 3 cr.
This course covers the fundamentals of sound, psychophysical measurement procedures, psychological acoustics, audiometric standards and electro-acoustic calibration of basic audiological equipment. Laboratory exercises are provided to illustrate course content. First term.

MAUD 205 Amplification I 2.2; 3cr.
This course covers the background and development of the design of hearing aids, ear mold acoustics, electroacoustic characteristics, performance standards and measurement techniques. Second term. Prerequisite: MAUD 204.

MAUD 206 Amplification II 2.2; 3 cr.
This course covers advanced procedures for selection and fitting of digital and programmable hearing aids. Students will learn subjective quality measurement, current and emerging prescriptive and fitting verification methods, and advanced hearing aid features. Auditory, visual, and vibrotactile receptive communication technologies will be covered, with an emphasis on needs assessment, selection, evaluation, and the verification process. Principles and procedures for implantable hearing devices from pre-candidacy evaluations through postoperative therapies will be discussed. First term. Prerequisite: MAUD 205.

MAUD 207 Auditory Evoked Potentials 3.0; 3 cr.
This course will cover basic concepts in electrophysiological recordings (e.g., electrode types/uses, far and near field recordings, volume conduction, dipole sources). Recording of both near- and far-field electrical responses will be studied. Recording techniques and test interpretation of common clinical evoked potentials will be covered, including electrocochleography (ECochG), auditory brainstem response (ABR), and auditory steady-state response (ASSR). Second term. Prerequisites: MAUD 201 and MAUD 202.

MAUD 208 Practicum Project Offered as MAUD 208A: Practicum Project I 0 cr. and MAUD 208B: Practicum Project II 1.4; 3 cr.
This course aims to introduce students to research in the field of Audiology by engaging them in a Capstone project. Projects may take several forms including development of surveys, evidence-based research, business plans, critical literature reviews with applications to clinical problems solving, development of clinical protocols, or participation in on-going research projects in the department. Students will be required to write a scholarly report summarizing the project. Second term. Prerequisite: ORLG 230.

MAUD 209 Vestibular-Balance Assessment and Management 3.0; 3 cr.
The goal of the course is to provide students with a concise overview of the theory behind vestibular and balance testing and practical ways to assess and manage patients who have vestibular/balance problems. First term. Prerequisites: MAUD 201 and ORLG 230.

MAUD 210 Aural Rehabilitation and Counseling 3.0; 3 cr.
Overview of approaches to audiologic management of adults and children with hearing difficulties. Topics include in-depth interview techniques, self-assessment instruments, auditory training, speech reading, interdisciplinary teaming, communication repair strategies, technology, adjustment to amplification, and management of auditory processing disorders. Operation and troubleshooting techniques for amplification systems commonly used in a classroom will be discussed (e.g., hearing aids, FM systems, assistive listening devices, vibrotactile devices, and cochlear implants). The course will also include psychoeducational/psychosocial and counseling strategies for patients and family management. First term. Prerequisite: ORLG 230.

MAUD 211 Medical Audiology 2.2; 3 cr.
An introduction to the major pathologies of the peripheral and auditory and vestibular systems. The course will include dysfunction arising from genetic factors, disease, and trauma, with an emphasis applied to presenting signs/symptoms, interpretation of laboratory / imaging results, and medical / surgical interventions. Second term. Prerequisite: ORLG 240.

MAUD 212 Special Topics 1.0; 1 cr.
This course is designed to address traditional or emerging topics in the field of audiology. The course will explore, in depth, a comparatively narrow subject which may be topical or of special interest to undergraduate students in Medical Audiology Sciences program. Annually.

MAUD 213 Environmental Audiology 3.0; 3 cr.
This course covers the effects of noise on health and society, hearing conservation programs, and noise measurement. Industrial, school, military, and social settings will be addressed. Annually.

ORLG 220 Screening Procedures Laboratory 1.9; 3 cr.
Beginning level audiologic practicum. Students will complete 90+ hours of clinical training under direct supervision. Clinical activities will include case history intake, biological calibration of equipment, otoscopic examinations, hearing screenings (pure tone, AABR, OAE), basic immittance testing. A weekly class meeting is held to discuss clinical cases and develop student report-writing skills. Infection control will also be discussed. First term. Pre- or corequisites: MAUD 200 and MAUD 202.

ORLG 230 Basic Clinical Procedures Laboratory 1.15; 5 cr.
150+ hours of clinically-supervised direct patient care. Students will be expected to perform and interpret basic behavioral and electrophysiological tests. A weekly class meeting is held to discuss clinical decision making and report writing. Management of unique populations will be covered (tinnitus, hyperacusis, malingering, ototoxicity). Second term. Prerequisite: ORLG 220; co-requisite: MAUD 207.

ORLG 240 Advanced Clinical Procedures Laboratory 1.15; 5 cr.
50+ hours of clinically-supervised direct patient care. Continued development of audiological assessment and intervention techniques for children and adults. Clinicians will be expected to administer and interpret balance/vestibular tests and electrophysiological tests, conduct electroacoustic assessment of hearing aids, make hearing aid adjustments based on probe-microphone and behavioral test results, and assist with the cochlear implant program. Under direct supervision. A weekly class meeting is held to discuss clinical decision making and report writing. First term. Prerequisite: ORLG 230, co-requisite MAUD 206 and 209.

ORLG 250 Comprehensive Practice Laboratory 1.15; 5 cr.
150+ hours of clinically-supervised direct patient care. Clinicians will practice all aspects of audiological care, with greater independence. A weekly class meeting is held to discuss professional issues in audiology, including private practice management, coding and reimbursement, marketing and sales, malpractice, credentialing, and ethics and clinical integrity in the practice of the profession of audiology. Second term. Prerequisite: ORLG 240.

Program of Medical Imaging Sciences

Coordinator and Assistant Professor:	Hannoun, Salem
Clinical Educators:	Abbas, Saly; Merhi, Hanane

This program is run in coordination with the Department of Diagnostic Radiology at the Faculty of Medicine.

The mission of the Medical Imaging Sciences (MIS) Program is to provide students with excellence in imaging education. MIS aims to produce academically and clinically competent radiographers who will become patient advocates in their field and perform their duties with empathy and respect towards all patients.

Course Description

MIMG 201 Introduction to Medical Imaging 2.0; 2 cr.
An overview of the field of radiologic technology and its role in health care delivery. Students are oriented to academic and administrative structure, and the profession as a whole. Basic principles of radiation protection are introduced. The ethical and legal responsibilities of the profession are discussed. First term.

MIMG 202 Imaging Physics 3.0; 3 cr.
A course that focuses on AC generators, DC motors, transformers, and rectification of AC. An introduction to modern physics, production of x-rays, x-ray interactions, radioactivity, production of radionuclides, and health physics. Summer. Pre or Corequisite: PHYS 205.

MIMG 203 Medical Imaging Equipment I 3.0; 3 cr.
An introduction to various image-detecting and processing systems; description of analogue and digital detection systems. A detailed study of the x-ray tubes with methods of kV, mA, exposure time control, and control of scattered radiation. First term. Prerequisite: MIMG 202.

MIMG 204 Medical Imaging Equipment II 3.0; 3 cr.
A detailed study of the equipment design and function in: Image Intensification, Breast Imaging, Nuclear Medicine/PET, Computed Tomography, Ultrasonography and Magnetic Resonance Imaging. Second term. Prerequisite: MIMG 203.

MIMG 205 Introduction to Principles of Diseases 3.0; 3 cr.
An introduction to pathology that focuses on nature and causes of diseases, diseases of the gastrointestinal and hepato-biliary systems, genito-urinary, and endocrine systems. A study of diseases of the nervous system, skeletal system, respiratory, cardio-vascular, and hematopoietic diseases; miscellaneous diseases related to nutrition and immune system. This course offers students information on the pathologic appearance of common diseases on a variety of diagnostic imaging procedures. First term. Prerequisite: PHYL 246 or BIOL 202.

MIMG 206 Principle of Imaging I 3.0; 3 cr.
An introduction to radiographic procedures, radiographic nomenclature, positioning aids, and accessory equipment. This course also provides a description of radiographic procedures pertaining to upper and lower extremity, shoulder girdle, and pelvis; and a description of the radiographic procedures pertaining to the thorax, the vertebral column, the cranium, facial bones, and forensic radiography. Second term. Prerequisites: MIMG 201 & (HUMR 246 or BIOL 201).

MIMG 206L Principle of Imaging I Laboratory 0.4; 2 cr.
A clinical training course in general and emergency radiography within controlled conditions. Second term. Co-requisite: MIMG 206.

MIMG 207 Principle of Imaging II 3.0; 3 cr.
An overview of contrast materials used in imaging. This course also provides a study of imaging procedures related to gastrointestinal, hepato-biliary, genitor-urinary and respiratory systems. Breast imaging techniques and interventional procedures related to different systems are discussed. First term. Prerequisite: MIMG 206.

MIMG 208 Sectional Anatomy 3.0; 3 cr.
A study of the sectional anatomy of the head, neck, thorax, abdomen, pelvis, and extremities. Second term. Prerequisite: HUMR 246 or BIOL 201.

MIMG 209 Quality Management and Image Analysis 3.0; 3 cr.
This course focuses on the quality assurance and quality control of imaging systems. Emphasis is placed on quality assessment of diagnostic equipment/procedures. Second term. Prerequisites: MIMG 204 and MIMG 207.

MIMG 210 Research Project; Offered as MIMG 210A: Research Project I and MIMG 210B: Research Project II
The course will help the students to effectively analyze data from various resources to evaluate and improve professional practice, and to promote growth in the profession. Students will be introduced to current research topics in medical imaging sciences in addition to ethical issues pertinent to evidence-based research.

MIMG 210A Research Project I 0 cr.
Research Project I. Prerequisites: EPHD 203 and EPHD 213.

MIMG 210B Research Project II 3 cr.
Prerequisite: MIMG 210A.

DGRG 220 Clinical Practicum I 0.8; 2 cr.
Clinical training in General Radiography, Mobile Radiography and Emergency Radiography and General Fluoroscopy within the Department of Diagnostic Radiology. Summer (6 weeks). Prerequisite: MIMG 201 MIMG 206, and MIMG 206L.

DGRG 230 Clinical Practicum II 0.15; 4 cr.
Clinical training in General Radiography, Mobile Radiography, Emergency Radiography and General Fluoroscopy within the Department of Diagnostic Radiology. First term (12 weeks). Prerequisite: DGRG 220.

DGRG 240 Clinical Practicum III 0.8; 2 cr.
Clinical training in General Radiography, General Fluoroscopy, Digital Subtraction Angiography/Interventional (DSA), Breast Imaging, Operating Theatre, Computed Tomography, General Ultrasound, Nuclear Medicine, Magnetic Resonance Imaging within the Department of Diagnostic Radiology. Second term (12 weeks). Prerequisite: DGRG 230.

DGRG 250 Clinical Practicum IV 0.8; 2 cr.
Clinical training in DSA/interventional (Digital Subtraction Angiography/Interventional), Breast Imaging, CT (Computed Tomography), U/S (Ultrasonography) and Imaging in the operating theatre. Summer (6 weeks). Prerequisite: DGRG 240.

DGRG 260 Clinical Practicum V 0.15; 4 cr.
Clinical training in Breast Imaging, CT (Computed Tomography), U/S (Ultrasonography) and MRI (Magnetic Resonance Imaging). First term (12 weeks). Prerequisite: DGRG 250.

DGRG 270 Clinical Practicum VI 0.15; 4 cr.
Clinical training in CT (Computed Tomography), MRI (Magnetic Resonance Imaging) and NM/PET (Nuclear Medicine/Positron Emission Tomography). Second term (12 weeks). Prerequisite: DGRG 260.

Modes of Analysis	Understan-ding Communi-cation - English and Arabic (9)	Cultures and Histories (9), Human Values (3)	Societies and Individ-uals (9)	Understa-nding the World (7), Quantit-ative Reason-ing (5)	Major Cours-es(26 +2+3 +18)	Other requi-red courses (8)	Comm unity-Engaged Learn-ing (3)
Lecture Course (9+12 +9+7 +3+26 +8+3)	Required Arabic Course: (3) Required English Courses: ENGL 203(3), 204(3)	Cultures and Histories (9) Phil 205 (3)	PSYC 201(3) HPCH 203(3) Elective (3)	PHYL 246(4) PHYS 205(3) EPHD 203(3) EPHD 213(2)	MIMG 201(2), 202(3), 203(3), 204(3), 205(3), 206(3), 207(3), 208(3), 209(3)	HUMR 246 (3) NURS 201 (2) Free Elective (3)	HMPD 204 (3)
Lab (1+2)				EPHD 203(3)	MIMG 206L (2)		
Research Project (1+3)				EPHD 213(2)	MIMG 210A (0), MIMG 210 B (3)		
Practical Training (18)					DGRG 220(2), 230(4), 240(2), 250(2), 260(4), 270(4)		

Program of Medical Laboratory Sciences

Coordinator:	Melhem, Nada
Professor:	Melhem, Nada
Lecturer:	Bou Hamdan, Mirna
Instructor:	Khatib, Rolla
Assistant Instructor:	Lababidi, Maya

This program is run in coordination with the Department of Pathology and Laboratory Medicine at the Faculty of Medicine. The Medical Laboratory Sciences (MLS) Program graduates committed healthcare professionals to serve and improve the health needs of individuals and communities. Our graduates are highly skilled professionals who perform analytical tests on blood, tissue and body fluids to provide laboratory information for the detection, diagnosis and treatment of diseases. Moreover, our degree guarantees immediate career opportunities and constitutes the foundation for advanced graduate studies in medicine, basic sciences and public health.

Course Description

MLSP 201 Clinical Hematology I 3.0; 3 cr.
This course is intended to introduce students to fundamental concepts in hematology including normal physiology of blood, development of blood cell elements in the erythrocytic, leukocytic and megakaryocytic cell lines as well as blood cell disorders, with a special emphasis on anemias. The course covers the different causes of anemias and prepares students for the diagnosis of the different types of anemia based on laboratory findings. It is based on lectures, discussions, demonstrations and case studies. Prerequisite: BIOL 201. First term.

MLSP 202 Clinical Hematology II 3.0; 3 cr.
This course is intended to introduce students to the various white blood cell anomalies, including numerical and morphologic abnormalities of cells. In addition, students are introduced to the major types of leukemia and Lymphoma as well as to the various tools used in the diagnosis of these malignancies, including morphologic criteria, cytochemical stains, immunophenotyping and the chromosomal abnormalities associated with these neoplasms. Prerequisite: MLSP 201. Second term.

MLSP 203 General Microbiology 2.4; 3 cr.
This course introduces students to the microbial world with emphasis on bacterial taxonomy, host-pathogen interactions, bacterial growth, bacterial genetics as well as antimicrobial susceptibility testing and concepts of bacterial resistance. Throughout the course, the lectures will be aligned with laboratory sessions introducing students to basics of bacterial identification including microscopy, bacterial culture and susceptibility testing. Prerequisite: BIOL 201. First term.

MLSP 204 Systematic Bacteriology 3.4; 4 cr.
This course is designed to introduce students to the medically important bacteria, the disease they cause, clinical signs and symptoms of each disease and the laboratory diagnosis including isolation and biochemical characteristics. Prerequisite: MLSP 203. Second term.

MLSP 207 Immunology and Blood Banking 2.0; 2 cr.
This is an introductory course in Immunology that is designed to provide a basic knowledge of the immune response and its involvement in health and disease. It introduces students to the basic immunological principles including innate and acquired immunity, humoral versus cell mediated immune responses, role of the complement system in the immune response, cells and organs involved in immune reactions and finally the cooperation between different cells in the clearance of antigen. Prerequisite: BIOL 201. First term.

MLSP 208 General and Diagnostic Virology 2.0; 2 cr.
This course introduces students to the major virus families and the respective representative viruses of clinical importance. During the course, students will be introduced to the epidemiology, pathogenesis, modes of transmission, laboratory identification and prevention and control measures of pathogenic viruses. Prerequisite BIOL 201. First term.

MLSP 211 Seminar 1.0; 1 cr.
This course is a one-credit course offered to Medical Laboratory Sciences (MLS) Students during their senior year. This course is designed to train students to search for, read and understand published scientific papers. Moreover, students will be trained to present in class and critically analyze original manuscripts. The presenting student(s) will be guided in class and in one-to-one meetings to learn how to interpret, defend and criticize the published work as well as respond to questions and inquiries. Second term.

MLSP 259 Diagnostic Serology 1.0; 1 cr.
This is an introductory course in Serology that is designed to introduce students to principles of antigen-antibody reactions. Special emphasis will be placed on the study of specific serological procedures used for the diagnosis of diseases. Prerequisite MLSP 207. Second term.

Clinical Chemistry is covered in two courses: LABM 201 in first term and LABM 202 in second term.

LABM 201 Clinical Chemistry I 2.0; 2 cr.

LABM 202 Clinical Chemistry II 3.0; 3 cr. Prerequisite LABM 201
A pair of courses in which the main objective is to acquaint students with fundamentals of clinical chemistry, including various analytical procedures, instrumentation, and methods used for determination of clinical analytes. Correlation of laboratory results with clinical manifestation is also an integral part of these courses. These two courses cover all aspects of routine clinical chemistry testing, such as carbohydrates, electrolytes, acid-base balance, blood gases, nitrogen metabolites, proteins, enzymes, lipids and lipoproteins, calcium metabolism, liver function tests as well as some advanced topics (hormones, therapeutic drug monitoring, toxicology) and specialized techniques like chromatography (HPLC and GC/Ms).

LABM 210 Cytology and Histological Techniques 2.0; 2 cr.
A course that includes a series of lectures and demonstrations on cell biology, a review of normal histology of various human organs, a description of examples of pathological changes, lectures on techniques of tissue handling, and preparation and staining of sections and smears for cytological material. Members of the department of Human Morphology. Second term.

LABM 220 Clinical Chemistry and Endocrinology 1.20; 4 cr.
Practical experience in clinical chemistry and endocrinology. Prerequisites: LABM 201 and LABM 202.

LABM 230 Clinical Hematology and Reception 3.20; 4 cr.
Practical experience in clinical hematology special procedures and reception area. Prerequisites: MLSP 201 and MLSP 202.

LABM 231 Clinical Laboratory Quality Systems 1.0; 1 cr.
This course is intended to give MLS students a thorough understanding of the quality systems as implemented in clinical laboratories with practical examples in order to relate theory to practice. The course includes all the basic elements and tools required to implement the quality system essentials across all phases of the laboratory workflow: pre-analytical, analytical, post-analytical. Second term.

LABM 233 Genetics and Molecular Biology 2.0; 2 cr.
A course that includes an introduction to human genetics, comprising the structure and function of DNA and the classification of genetic disorders. Diagnostic techniques in human genetics (cytogenetics, biochemical, and molecular) will be covered, as well as molecular techniques applied in pathology and microbiology. First term.

LABM 235 Medical Mycology 1.0; 1 cr.
A course that covers the different kinds and types of fungi (yeast and mold). This course discusses their disease spectrum mode of infection, gross requirements, a cultural and non-cultural methods of identifications, as well as antifungal drugs and susceptibility testing of fungi. First term.

LABM 240 Clinical Microbiology 3.20; 4 cr.
Practical experience in clinical microbiology (aerobic and anaerobic bacteriology, mycobacteriology, mycology, and susceptibility testing). Prerequisites: MLSP 203 and MLSP 204.

LABM 250 Clinical Parasitology and Urinalysis 0.20; 2 cr.
Practical experience in clinical microscopy pertaining to parasitology, urinalysis, and spermogram. Prerequisite: MBIM 223.

LABM 260 Serology 1.5.20; 2 cr.
Practical experience in clinical immunology and serodiagnostic techniques. Prerequisite: MLSP 259.

LABM 270 Blood Banking 1.5.20; 2 cr.
Practical experience in blood banking and transfusion medicine. Prerequisite: MLSP 207.

LABM 280 Cytogenetics, Molecular Diagnostics and Histotechniques 0.20; 2 cr.
Practical experience in reception, cytogenetics, and histotechniques. Prerequisite: LABM 210.

MBIM 223 Parasitology for MLS Students 2.2; 4 cr.
The purpose of the course is to provide the basic principles and concepts of parasitic diseases and their laboratory diagnosis. Emphasis is placed on life cycles, pathogenesis, preventive measures and in-depth laboratory identification of the parasites. Second term.

Modes of Analysis	**Understanding Communication - English and Arabic (9)**	**Cultures and Histories (9), Human Values (3)**	**Societies and Individuals (6)**	**Understanding the World (11), Quantitative Reasoning (3)**	**Major Courses (34 +20)**	**Other required courses (3)**	**Community-Engaged Learning (3)**
Lecture Course (9+12 +6+12 +29+3 +3)	Required Arabic Course: (3) Required English Courses: ENGL 203(3), 204(3)	Cultures and Histories electives (9) PHIL 205 (3)	HPCH 203(3) Elective (3)	BIOL 201(4) CHEM 208(3) PHYL 246(4) EPHD 203(3)	MLSP 201(3), 202(3), 203(3), 204(4), 207(2), 208(2), 259(1) LABM 201(2), 202(3), 210(2), 231(1), 233(2), 235(1) MBIM 223(4)	BIOC 255(3)	HMPD 204 (3)
Lab (4+4)				BIOL 201(4) CHEM 209(2) EPHD 203(3)	MLSP 203(3), MLSP 204(4), MBIM 223(4)		
Seminar (1)					MLSP 211(1)		
Practical Training (20)					LABM 220(4), 230(4), 240(4), 250(2), 260(2), 270(2), 280(2)		

MBIM 223 is a major required course in the discipline. However, it is not counted in the major average. Only LABM and MLSP courses count towards major average.

Center for Research on Population and Health (CRPH)

Acting Director:	McCall, Stephen
Instructors of Public Health Practice:	Akl, Christelle; Saad, Ghada
Affiliates:	Campbell, Oona; Fahme, Sasha; Jamaluddine, Zein; Makhlouf, Carla; Millet, Christopher;

The Center for Research on Population and Health (CRPH) leads and supports methodologically robust research at the intersection of population and health to improve the health and well-being of populations in Lebanon, the Arab region and globally.

CRPH is a hub for high-impact population and health research. We invest in people through training and capacity building and provide infrastructure for the conduct of rigorous research. The Center promotes interdisciplinary research and innovative approaches to research, and fosters exchanges and collaborations among AUB faculty, graduate students and colleagues in the Arab region and beyond through conferences, workshops and seminars.

The Center hosts MPH practicum students, MS thesis projects and provides students and researchers at FHS with support in survey development and data management and analyses; access to regional data sets; and support for new areas of research. CRPH also hosts researchers who wish to visit the Faculty of Health Sciences with the goal of collaborating with FHS faculty or of pursuing innovative research or writing activities.

Center for Public Health Practice (CPHP)

Director:	Germani, Aline
Instructors of Public Health Practice:	Kalot, Joumana; Najem, Martine

The Center for Public Health Practice advances evidence-based public health practice in Lebanon and the region. It creates opportunities for innovation and engagement that enrich the academic experience of students and faculty. The Center nurtures the culture of collective responsibility, partnership building, diversity and social justice.
Within the framework of its mission, CPHP has adopted the following strategic goals:

- Generate and disseminate knowledge to inform public health practice, research, policy and curriculum.
- Respond to public health priorities and emerging crisis through innovative programming and sustained partnerships for health and development.

CPHP collaborates closely with a variety of partners including national, regional and international entities such as academic institutions, ministries, UN agencies, NGOs, municipalities and local communities in Lebanon and throughout the Arab world.

CPHP Tracks

- Training and Workforce Development; in person and e-courses
- Evaluation of Programs/Implementation Research
- Designing Health and Development Programs
- Documenting Best Practices/Knowledge Dissemination
- Developing Resource Material
- Organizing and Delivering Courses for Students
- Creating joint courses and programs with other faculties and universities

CPHP Themes

Youth development, refugee health, sexual and reproductive health, maternal and child health, ageing, health communication, school health and environment, tobacco, child protection and child rights, gender and gender-based violence, NGO management, among others.

CPHP Reach

Egypt, Iraq, Jordan, Kuwait, Libya, Oman, Syria, Tunisia, Lebanon.

Knowledge to Policy Center (K2P)

Director:	El-Jardali, Fadi
Instructors of Public Health Practice:	Abou Samra, Clara; Bou Karroum, Lama; Fadlallah, Racha; Jamal, Diana

Knowledge to Policy (K2P) Center draws on an unparalleled breadth of synthesized evidence and context-specific knowledge by producing briefs and conducting policy dialogues to impact policy agendas and action. K2P produces high quality policy products to help policymakers and stakeholders have the clearest understanding of the most important messages, options and recommendations to address pressing health and social system problems.

K2P harnesses the best available evidence on pressing health and social systems priorities; convenes concerned policy makers, stakeholders, thinkers, researchers and doers; and prepares leaders to meet pressing health issues by building their capacity in public policymaking.

The K2P team comprises a program manager, communication officer, an advocacy lead and several evidence lead specialists.

K2P Functions and Activities

- Inform the production, packaging and sharing of research data and evidence in an objective manner and based on current and emerging policymaking priorities

- Utilize a rapid response system to inform policymaking in an objective manner using the best available evidence that can be prepared and packaged within time and resource constraints
- Conduct evidence informed advocacy and support implementation in policy and practice
- Conduct policy tracing research and develop models for knowledge translation that are context-specific, culturally appropriate, relevant and effective for the region
- Support research networks, civil society, researchers, policy makers and the media
- Engage with citizens to enhance their involvement in the decision and policymaking process on high priority issues
- Build the capacity of researchers, policymakers and media in knowledge translation (KT) and evidence communication methods to influence policy, practice and action

K2P develops a diverse set of KT products including K2P Policy Briefs, K2P Briefing Notes, K2P Rapid Response, K2P Evidence Summaries, K2P Dialogue Summaries, K2P Advocacy Briefs, K2P Citizens Briefs, K2P Citizen Consultation Summary, and K2P Media Bites. Through its signature Mentorship Program, K2P is developing a sustainable capacity for evidence-informed decision-making in low and middle-income countries (LMICS) in the six regions of the World Health Organization (WHO). This Program constitutes the first arrangement of its kind in LMICs for promoting sustainable capacity development in evidence-informed decision-making. The recently launched K2P Policy Fellowship Program also offers a unique opportunity to strengthen capacity in evidence-informed decision-making by utilizing immersive methods of experiential learning and professional cross-placements. K2P leads the COVID-19 Rapid Response Series. Through this initiative, K2P Center has been contributing to the different aspects of the pandemic response by harnessing the best available evidence & data on emerging priorities and making them accessible to policymakers, stakeholders, and citizens in short periods of time.

Collaborations

K2P collaborates with national and international partners including Center for Systematic Reviews on Health Policy and Systems Research (SPARK) and Issam Fares Institute for Public Policy and International Affairs (IFI) at the American University of Beirut; and McMaster Health Forum in Canada and the Evidence Informed Policy Network (EVIPNet) at the World Health Organization (WHO) in Geneva.

WHO Collaborating Center for Evidence-Informed Policy and Practice

Since 2015, the World Health Organization (WHO) has designated K2P Center twice as a WHO Collaborating Center for Evidence-Informed Policy and Practice. This re-designation, effective for another four-year term, is unique since the K2P Center is the only WHO Collaborating Center for Evidence-Informed Policy and Practice in Lebanon and the region, and is the second WHO Collaborating Center of this kind globally after McMaster Health Forum in Canada.

The Center for Systematic Reviews on Health Policy and Systems Research (SPARK)

Co-Directors:	El-Jardali, Fadi; Akl, Elie

The Center for Systematic Reviews on Health Policy and Systems Research (SPARK) at the American University of Beirut (AUB) is one of four Systematic Review Centers on Health Policy and Systems Research and the first of its kind in the Region.

The Center is a joint collaboration between the Faculty of Health Sciences (FHS) and the Faculty of Medicine (FM). SPARK Center was appointed as the General Secretariat of the Global Evidence Synthesis Initiative (GESI).
SPARK specializes in the production of high-quality and timely systematic reviews and rapid reviews that respond to health policy and systems research priority issues at the national and the regional level. SPARK also invests in developing individual and institutional capacity in the Region in conducting systematic reviews and rapid reviews of Health Policy and Systems Research.

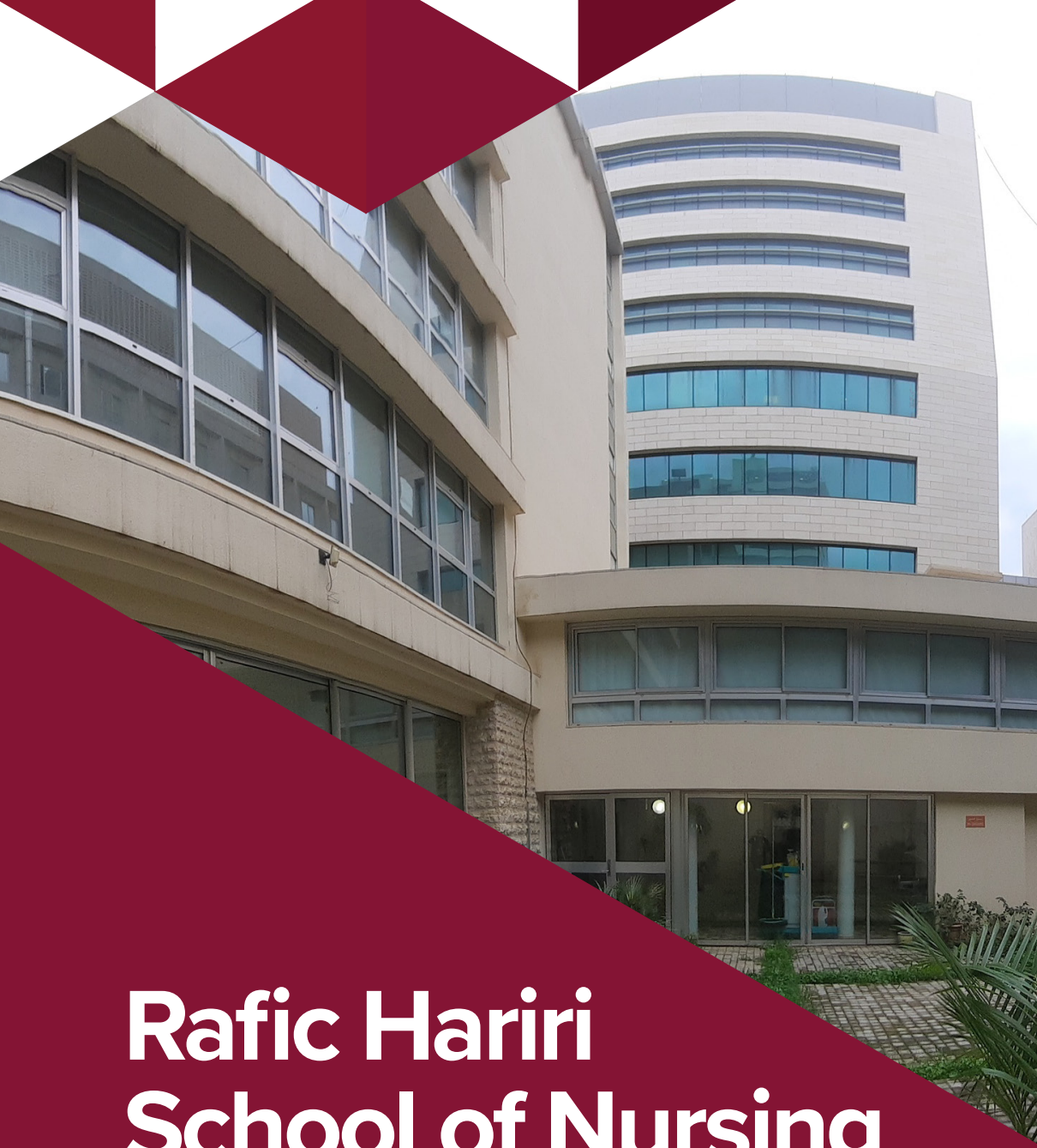
SPARK Activities

- Conduct priority setting exercises with policymakers and other stakeholders, researchers, and civil society to prioritize review topics on health policy and systems research
- Produce timely systematic reviews and rapid reviews on prioritized topics and review questions
- Hold national and regional capacity-building workshops to develop individual and institutional capacities in conducting different types of research evidence syntheses
- Prepare SUPPORT summaries and hold deliberative dialogues to promote the uptake of evidence from systematic reviews and rapid reviews into policies
- Contribute to the methodology of research synthesis and knowledge production

SPARK develops a diverse set of products including systematic reviews, rapid reviews, scoping reviews, SUPPORT summaries, and evidence gap maps.

Collaborations

SPARK collaborates with national and international partners including the Knowledge to Policy (K2P) Center at the American University of Beirut; WHO Alliance-funded Centers for systematic reviews in China, South Africa and Chile.



Rafic Hariri School of Nursing (HSON)

Undergraduate Program

Officers of the School

Fadlo R. Khuri	President of the University
Zaher Dawy	Provost
Samar Noureddine	Dean of the Rafic Hariri School of Nursing
Nuhad Yazbik-Dumit	Associate Dean for Academic Affairs
Bradley Jon Tucker	Registrar
Antoine Sabbagh	Director of Admissions
Lokman Meho	University Librarian

Faculty

Convener/Graduate Division	Honein, Gladys
Coordinator, PhD Program:	Yazbik-Dumit, Nuhad
Chair of the online working group at HSON	Yazbik-Dumit, Nuhad
Director, blended MSN program in Nursing Administration and Management:	Abi Abdallah Doumit, Myrna
Director, Graduate Online Diploma in Nursing Administration and Management:	Younan Sabbagh, Lina
Director of the professional diploma in nursing education:	Abi Fakhr, Lina
Coordinator, MSN Nursing Administration and Management Track (blended):	Yazbik-Dumit, Nuhad
Coordinator, MSN Adult-Gerontology CNS Track:	Massouh, Angela
Coordinator, MSN Psychiatry and Mental Health CNS Track:	Farhood, Laila
Coordinator, MSN Community and Public Health CNS Track:	Honein, Gladys
Convener/Undergraduate Division:	Gharibian Adra, Marina
Coordinator, Accelerated Programs:	Madi, Dina
Director, Continuing Education and Offshore Programs:	Massouh, Angela
Professors:	Farhood, Laila; Noureddine, Samar; Yazbik-Dumit, Nuhad
Associate Professors:	Abi Abdallah Doumit, Myrna; Fares, Souha; Honein, Gladys; Sukkarieh, Ola
Clinical Associate Professors:	Madi, Dina; Adra, Marina; Abi Fakhr, Lina; Younan Sabbagh, Lina
Assistant Professors:	Massouh, Angela; Puzantian, Houry; Dakessian, Silva

Clinical Instructors:	Abdallah, Nour; Avedissian, Tamar; Damianos, Danielle; Succar, Emilie, Malkedjian, Sarine Rita
Instructor:	Chedid, Rana
Part time clinical instructor:	Daibess, Nadine
Visiting Professor:	Kordahi Badr, Lina

School Administrative Support

Executive and Financial Officer:	Chami, Diana
Student Services and Career Planning Officer:	Abdallah, Mira
Skills and Simulation Lab Coordinator:	Naser, Joyce
IT Manager, Faculty of Medicine and Hariri School of Nursing:	Itani, Maher
IT Field Support Technician:	Karout, Toufic
Medical Librarian:	El Zein, Ola

Historical Background

The School of Nursing, founded in 1905, was the first nursing school in the Middle East. The five–year Bachelor of Science in Nursing program, established in 1936, was replaced in 1964 by a four–year program leading to the degree of Bachelor of Science in Nursing. Students entering the school as sophomores graduate in three calendar years. The RN-BSN program was reactivated and launched in 2003. The Masters of Science in Nursing (MSN) program was launched in 2003. The Bachelor of Science in Nursing program (BSN) and the MSN program are registered by the Department of Education of New York State, HEGIS codes 1203.00 and 1203.10, respectively. The BSN and MSN programs are accredited by CCNE, the Commission on Collegiate Nursing Education, in the USA. The AUB School of Nursing is the first School of Nursing outside the US territories to be accredited by CCNE. The PhD program, HEGIS code 1203.12, was launched in the academic year 2018-2019. Effective September 2018, Hariri School of Nursing became the seventh independent faculty at AUB.

Mission

The mission of the School of Nursing is to promote and maintain the highest educational standards of excellence, integrity, and professionalism in nursing, following the American model of nursing education and practice. The school aims to provide learning opportunities that will enable students to develop into competent nurses who, guided by ethical principles, respect cultural diversity while coordinating and delivering high–quality, compassionate nursing care in Lebanon and the region. The faculty believes education is an interactive process between faculty and students with both taking responsibility for active learning. The baccalaureate program, drawn primarily from the humanities, sciences, and caring disciplines, focuses on the use of nursing theory and research as a basis for practice. The master's program focuses on preparing nurses for advanced nursing practice roles and is based on the use and generation of research–based knowledge to guide practice. The PhD program in Nursing Science aims to provide rigorous training for research careers in

nursing and healthcare. The program is intended to produce research scientists who will make significant and original contributions to nursing practice and healthcare delivery. Nursing students at AUB learn to think critically, develop professional attitudes and leadership skills, and appreciate the value of life–long learning and freedom of speech.

Vision

The Rafic Hariri School of Nursing aspires to become the leading school of nursing in Lebanon and the region and nationally and internationally recognized for excellence in education, research, and service.

The school is committed to offering cutting-edge, culturally relevant and internationally recognized graduate and undergraduate education, fostering life-long learning and scholarship, developing leaders in nursing and health care, and attracting a competent and culturally diverse student body.

Undergraduate Program Outline

Admission

Students holding diplomas from a 12–year secondary school may gain admission to the School of Nursing as first year nursing students (see required courses at the freshman level). Freshman students wishing to transfer to the School of Nursing from AUB or another institution may gain admission provided they complete the required freshman courses.

Bachelor of Science in Nursing (BSN)

The School of Nursing follows the admission policies and criteria of the university. For further details, see the section on Admissions of this catalogue.

Accelerated Programs

TS/LT-BSN

The curriculum is designed to permit the graduates of TS/LT in nursing to pursue the degree of Bachelor of Science in Nursing as per the university entrance requirements. The time limit for completion of the program should not exceed six calendar years. A selected number of nursing courses may be validated if applicable.

Preferred requirement for admission to the program is one-year experience in addition to the University entrance requirement. The applicant should provide the TS/LT governmental exam certificate and license to practice nursing from the Ministry of Public health. The candidate may be asked to have an interview with the program convener or a designated faculty member.

BT-BSN

According to the decree no. 855 dated 01/07/2015, issued by the Ministry of Education and Higher Education, holders of the technical baccalaureate (BT) are eligible for admission to similar fields as that of BT. In this case, holders of BT nursing may apply to any health-related major.

Those applying to the BSN program should complete the following remedial/pre-requisite freshman level courses prior to the BSN II year:

- 3 credits in Mathematics (choose one of: MATH 101, MATH 102, MATH 203, MATH 204)
- 3 credits in Chemistry (CHEM 101)
- 3 credits in Biology (BIOL 101)
- 3 credits in Physics (PHYS 101, 103 or 200)

BS/BA-BSN

The School of Nursing accelerated program is designed for individuals who have a BS/BA in fields other than nursing. The streamlined curriculum permits students to earn a BSN in 24 months. Students who graduate from this program are entitled to sit for the National Colloquium Exam to become registered nurses. The admission to the BS/BA-BSN program requires the following:

- BS/BA degree in a field other than nursing
- A minimum GPA 3.0 including prerequisite courses and general education requirements
- Completion of the following prerequisite courses prior to admission: ENGL 204, PSYC 201, Biostatistics course, PSYC 210, SOAN 201, and four elective courses in humanities

Applications are available online through the AUB website. Students are urged to submit course syllabi and course descriptions for courses requiring equivalence.

Transfer from the Freshman Class

Transfer students from the freshman class of the Faculty of Arts and Sciences may apply to the sophomore year at the Rafic Hariri School of Nursing. To be eligible for admission, the applicant must have:

- completed at least 26 freshman credits prior to their registration in the fall or spring term and achieved a minimum cumulative GPA of 2.7.

Transfer from Other Faculties at AUB

Transfer students from other faculties at AUB may apply to the BSN program. To be eligible for admission, the applicant must have:

- completed at least 24 credits prior to their registration in the fall or spring term and achieved a minimum cumulative GPA of 2.7.

Transfer from Other Universities

Transfer students from other universities in Lebanon or abroad may apply to the junior year. To be eligible for admission, the applicant must have:

- completed 30 sophomore credits (1 year) or more prior to their registration in the fall or spring term,
- achieved a minimum cumulative average equivalent to the AUB GPA 2.7,
- submitted the most recent transcript of their grades,
- and met the Readiness for University Studies in English.

Once a student is accepted, the assigned academic adviser follows up with the student on credit transfer and course equivalences. The student should submit course syllabi and course descriptions for courses requiring equivalence. Credits transferred from other institutions will show as 'Pass' on the AUB transcript and will not be part of the calculation of the GPA (with reference to the General University Academic Information). A grade of (C+) or above is required in the major courses for transfer. Furthermore, accepted students must complete the final 45 credits at AUB.

Dual Degree

The School of Nursing follows the requirements set by AUB to allow students to pursue a dual degree. For further details, see the section on General University Academic Information.

Courses

Course Numbers

Nursing courses are numbered according to level and they normally follow a sequence. See curriculum for the Bachelor of Science in Nursing and course descriptions on page 680.

Numbers Following Course Titles in the Course Description

- The first number following the title of a course indicates the number of class hours per week.
- The second number indicates the clinical hours required each week.
- The last number indicates the number of credit hours applied toward graduation.

Frequency of Courses

Courses marked fall/spring/summer are offered accordingly during each academic year.

Graduation Requirements

All recommendations for graduation are made by vote of the faculty upon the recommendation of the academic committee.

To be eligible for graduation with the degree of Bachelor of Science in Nursing, the following requirements must be met:

- completion of the prescribed program of study with a minimum of 103 credits after the freshman class or equivalent, and 91 credits for those entering as registered nurses (excluding the remedial courses mentioned under section TS/LT-BSN program)
- an overall GPA of 2.3, excluding freshman courses.
- The degree program must be completed within a maximum of six years, divided as follows, two calendar years for BSN II, two calendar years for BSN III, and two calendar years for BSN IV.
- Please refer to the General university academic information for more details.

All undergraduate transfer students from AUB or from other recognized institutions of higher learning to the School of Nursing need to complete the required prerequisites and all required nursing courses. A minimum residency period of one year or 30 credits for within AUB transfers and 45 credits for transfers from outside must be completed at AUB.

Course credits pertinent to the nursing curriculum may be transferred according to criteria set by the admission and academic committees.

Licensing

Graduates are qualified for the licensing examination in Lebanon (Colloquium). Non-Lebanese graduates cannot practice Nursing in Lebanon, unless permitted by the Order of Nurses in Lebanon in exceptional situations.

Academic Rules and Regulations

For information on Academic Advisers, Categories of Students, Correct Use of Language, and Graduation with Distinction and High Distinction, see General University Academic Information in this catalogue.

Attendance

Classes and Laboratories

- Students are expected to attend all classes, laboratories, and any other required activities. Absence by students, whether excused or not, from any class or laboratory session does not excuse them from their responsibility for the work done or from any announcements made during their absence.
- Students who are absent from more than one fifth of the number of lectures of any course during a term lose all credit for the course. Please refer to the General University Academic Information for more details.
- Students may not be excused from laboratory and field requirements. All missed clinical and field requirements must be made up for. In case of repeated absences from clinical courses, over one fifth of the total hours, the student may be asked to drop the course.

Examinations and Quizzes

Students are not allowed to be absent from announced final examinations and quizzes unless they present an excuse considered valid by the coordinator of the course. The course coordinator may then require the student to take a makeup examination.

Students taking non–nursing courses in other faculties of the university are required to

follow the attendance regulations of that faculty.

Students who need special accommodation during exams should get a letter from the Accessible Education Office.

Grading System

Refer to the grading system, under "General University Academic Information" section in the catalogue.

The passing grade for all nursing major courses is C+, except for NURS-203 (passing grade is D).

Incomplete Grades

- Incomplete course work will be reported as an "I" followed by a numerical grade reflecting the evaluation of the student available at the end of the term. This evaluation is based on a grade of zero on all missed work.
- To secure permission to complete the work for a course, a student must submit a valid excuse to the instructor of the course and the academic committee within two weeks from the date of the scheduled final exam for the course.
- Students permitted to complete work for a course must do so within four weeks of the start of the next regular term. After the incomplete work is done and evaluated by the faculty member, a grade change will be considered by the Dean of the school (upon the recommendation of the program convener) and a new grade reported to the Office of the Registrar.
- If no valid excuse is presented and the work, if permitted, is not completed within the time limits specified above, the "I" will be dropped and the letter grade available becomes the final grade in the course.
- For the purposes of averaging, the letter grade is used until it is changed in accordance with the grading system set above.

Student File Reactivation

To maintain student status, individuals are required to register for each term, except during the summer session unless required by the program. Under special circumstances, students may withdraw from a semester upon the advisor's recommendation. Those who opt for this action are not obligated to register again; however, they must fill a reactivation/readmission petition if they intend to complete the program requirements within the designated time frame.

Promotion

Students shall be promoted at the end of the summer session after completion of 30 or more credits beyond the requirements from the previous level. However, students who register in September and who lack 6 or fewer credits for completion of a class will be registered in the next higher class at the discretion of the academic committee. In order to be promoted, students must attain a minimum average of (GPA: 2.0) at the end of the second regular term (sophomore year) and (GPA: 2.3) in the following years. Promotion of BSN students based on earned credits: Sophomore (N2) nursing students are promoted to N3 if they complete 30 earned credits; Junior (N3) nursing students are promoted to N4 if they complete 67 earned credits.

Placement on the Dean's Honor List

To be placed on the Dean's Honor List at the end of a term, a student must carry at least 12 credits of courses, have passed all the courses of the term, attained in all courses an overall average of (GPA: 3.7) or be ranked in the top 10 percent of the class and have an overall average of (GPA 3.3), and not have been subjected to any disciplinary action within the university. Please refer to the General University Academic Information for more details.

Graduation with Distinction and High Distinction

The School of Nursing follows the academic rules and regulations set by AUB to recommend the graduation of students with Distinction and High Distinction. For further details, see the section on General University Academic Information.

Failures and Deficiencies

Placement on Probation

Follow AUB Academic rules and regulations.

Removal from Probation

Follow AUB Academic rules and regulations.

Repeating Courses

A student may repeat any course with the consent of the adviser and course coordinator.

- All required courses that a student fail must be repeated. No course may be taken more than three times including withdrawal from the course.
- When a course is repeated, the highest grade obtained will be considered in the calculation of the (Overall GPA).
- A student who fails or withdraws from a course may be delayed from graduating.

Dismissal from the BSN Program

A student may be dismissed by vote of the faculty upon the recommendation of the academic committee in any of the following cases:

- failure to remove probation within two terms
- failure in one-third or more of the load attempted during that year and failure to attain the minimum yearly average (GPA)
- not making satisfactory academic progress, having not shown sufficient professional promise, or having behaved in a manner below the norms expected by the school
- Failure to meet clinical requirements as stipulated in the nursing courses syllabi
- Failure to satisfy the requirements of the repeated year

Students who are dropped from the program will be placed as majorless for two consecutive

regular terms to secure a transfer to another major by the third term of being majorless or risk being dismissed from the University. Please refer to the General University Academic Information for more details.

Application for Readmission

When, in accordance with university regulations, a student is dropped, the implication is that the student is not qualified to continue her/his education at the School of Nursing. For consideration for readmission please refer to General University Academic Information.

Disciplinary Action

A student engaging in academic misconduct, such as cheating on examinations or plagiarism, will be referred to the Student Affairs Committee and the Dean.

Awards

BSN students can be nominated for an award. A list of awards is found below for your reference. A student can nominate himself or herself. In addition, an adviser or a faculty member can nominate a student for an award. Eligible nominees should:

1. Submit a nomination form
2. Have a minimum overall average of 3.2 or 80/100
3. Not have received a Dean's warning
4. Be recommended by his/her adviser
5. Have contributed to the university life
6. Portray a Professional Image

HSON Florence Nightingale Award

The HSON Florence Nightingale Award is a cash award granted to a senior student on the basis of academic achievement, professional integrity, seriousness of purpose, contribution to professional and university life, and willingness to join AUBMC after graduation.

Penrose Award

This is a non-cash honorary award presented on the basis of scholarship, character, leadership, and contribution to university life to an outstanding graduate of the school.

Janet Haddadin Nursing Award

The Janet Haddadin award is a cash award granted to a graduating undergraduate nursing student with the highest Cumulative GPA"

Salma Mansur Jurdak Excellence Award in Nursing

The Salma Mansur Jurdak Excellence award is a cash award granted to a graduating undergraduate nursing student with top academic achievement and demonstrated dedication to the profession

Women's Auxiliary Awards

WAA are certificate awards granted to senior students who meet the following criteria:

- academic achievement
- professional integrity and seriousness of purpose
- contribution to professional and university life
- willingness to join AUBMC after graduation

Lions Award

The Lions Award is a non-cash award granted to an outstanding student who has been commended by the faculty of the School of Nursing.

The Rouzan Al-Najjar Excellence Awards in Nursing

This award is a monetary award presented by the Yafa Foundation. It is given to three students (one senior, one junior and one sophomore) who are the most academically qualified Arab Nursing student at the end of their senior/junior/sophomore year of his/her studies, who shows outstanding academic and professional promise, and intent to work in Nursing after graduation.

Curricula

Bachelor of Science in Nursing

First Year

Freshman curriculum requires completion of 30 credits. The following courses are required: ENGL 203 (3cr), Humanities (6cr), MATH 100 (3cr), MATH 101 (3cr), CHEM 101 (3cr), CHEM 101L (1cr), BIOL 101 (3cr), Natural Sciences (3cr), Social Sciences (3cr), & elective of any freshman course other than SOAN 201 and PSYCH 201.

Second Year

		No. of Weeks	Lecture Hrs.	Lab. or Clinical Hrs.	Total Clock Hrs.	Credit Hrs.
First term						
BIOC 246	Biochemistry for Nurses[GE]	16	64	-	64	4
ENGL 203	Academic English[4 5 GE]	16	48	-	48	3
HUMR 244	Introduction to Human Biology[GE]	16	32	-	32	2
NURS 200	Introduction to Nursing	16	32	-	32	2
PSYC 201	Introduction to Psychological Science[GE]	16	48	-	48	3
Total			**224**		**224**	**14**
Second term						
NURS 201	Introduction to Nursing Practice	16	16	35	51	2
NURS 202	Health Assessment	16	16	35	51	2
HUMR 248	Human Anatomy and Physiology[GE]	16	60	30	90	5
MBIM 237	Microbiology and Immunology for Nursing	16	32	28	60	3
NURS 203	Biostatistics for Nurses[GE]	16	48	-	48	3
Total			**172**	**128**	**300**	**15**
Summer Session						
ELEC	History of Ideas (Cultures and Histories)[GE]	8	48	-	48	3
ELEC	Cultures and Histories[GE]	8	48	-	48	3
ENGL 204	Advanced Academic English[GE]	8	48	-	48	3
Total			**144**	**0**	**144**	**9**

Third Year

		No. of Weeks	Lecture Hrs.	Lab. or Clinical Hrs.	Total Clock Hrs.	Credit Hrs.
First term						
PHRM 240	Pharmacology	16	48	-	48	3
NURS 300	Nursing Care of Adults and Older Adults I: Theory and Practicum	16	32	112	144	5
NURS 304	Nursing Care of the Expectant Family: Theory and Practicum	16	32	112	144	5
PSYC 210[2]	Lifespan Development Psychology[GE]	16	48	-	48	3
NURS 210A	Pathophysiology	16	16	-	16	1
Total			**176**	**224**	**400**	**17**
Second term						
NURS 302	Nursing Care of Adults and Older Adults II: Theory and Practicum	16	32	112	144	5
NURS 306	Nursing Care of the Children, Theory and Practicum	16	32	112	144	5
NURS 210B	Pathophysiology	16	16	-	16	1
ELECT	Human Values (Ethics)[GE]	16	48	-	48	3
Total			**128**	**224**	**352**	**14**
Summer Session						
SOAN 201	Introduction to the Study of the Society[GE]	8	48	-	48	3
ARAB 201	Issues in Contemporary Arab Culture[GE]	8	48	-	48	3
NURS 307	Practicum I	8	-	96	96	0
Total			**96**	**96**	**192**	**6**

Fourth Year

		No. of Weeks	Lecture Hrs.	Lab. or Clinical Hrs.	Total Clock Hrs.	Credit Hrs.
First term						
NURS 400	Critical Care Nursing, Theory and Practicum	16	32	84	116	4
NURS 402	Mental Health and Psychiatric Nursing, Theory and Practicum	16	48	84	132	5
NURS 406	Nursing Research	16	48	-	48	3
NURS 404	Nursing Informatics	16	32	-	32	2
Total			**160**	**168**	**328**	**14**
Second term						
NURS 408	Community Health Nursing, Theory and Practicum[GE]	16	48	84	132	5
NURS 410	Leadership and Management in Nursing, Theory and Practicum	16	48	96	144	5
ELEC	Cultures and Histories[GE]	16	48	-	48	3
NURS 411	Intensive Practicum II	16	-	144	144	0
IPEC 300	Interprofessional Education and Collaboration	16	16	-	16	1
Total			**159**	**324**	**483**	**14**
Total Credit Hours			**1259**	**1164**	**2423**	**103**

TS/LT-BSN (Revised)

First year

		No. of Weeks	Lecture Hrs.	Lab. or Clinical Hrs.	Total Clock Hrs.	Credit Hrs.
First term						
BIOC 246	Biochemistry for Nurses	16	64	-	64	4
ENGL 203	Academic English[8] [9GE]	16	48	-	48	3
HUMR 244	Introduction to Human Biology[GE]	16	32		32	2
PSYC 201	Introduction to Psychological Science[GE]	16	48	-	48	3
MATH		16	48	-	48	3
Total			**240**		**240**	**15**
Second term						
HUMR 248	Human Anatomy and Physiology[GE]	16	60	30	90	5
MBIM 237	Microbiology and Immunology for Nursing	16	32	28	60	3
NURS 205	Foundations of Professional Nursing	16	32	-	32	2
NURS 203	Biostatistics for Nurses[GE]	16	48	-	48	3
PHYSICS		16	48	-	48	3
Total			**220**	**58**	**278**	**16**
Summer Session						
PHRM 240V	Pharmacology	8	48	-	48	3
NURS 308V	Maternal-Child Nursing, Theory and Practicum	8	48	144	192	6
Total			**96**	**144**	**240**	**9**

Second Year

		No. of Weeks	Lecture Hrs.	Lab. or Clinical Hrs.	Total Clock Hrs.	Credit Hrs.
First term						
SOAN 201	Introduction to the Study of the Society[GE]	16	48	-	48	3
PSYC 2102	Lifespan Development Psychology	16	48	-	48	3
ENGL 204	Advanced Academic English	16	48	-	48	3
ELEC	Cultures and Histories[GE]	16	48	-	48	3
Biology		16	48	-	48	3
NURS 210A	Pathophysiology	16	16	-	16	1
Total			**256**	**0**	**256**	**16**
Second term						
NURS 312	Mental Health and Psychiatric Nursing, Theory and Practicum	16	48	84	132	5
NURS 210B	Pathophysiology	16	16	-	16	1
NURS 313	Leadership and Management in Nursing, Theory and Practicum	16	48	96	144	5
CHEMISTRY		16	48	-	48	3
Total			**160**	**180**	**340**	**14**
Summer Session						
NURS 311V	Nursing Care of Adults and older Adults, Theory and Practicum	8	48	126	174	6
ELEC	Elective Humanities	8	48	-	48	3
Total			**96**	**126**	**222**	**9**

Third Year

		No. of Weeks	Lecture Hrs.	Lab. or Clinical Hrs.	Total Clock Hrs.	Credit Hrs.
First term						
NURS 405V	Critical Care Nursing, Theory and Practicum	16	32	84	116	4
NURS 406	Nursing Research	16	48	-	48	3
NURS 404	Nursing Informatics	16	32	-	32	2
NURS 314	Community Health Nursing, Theory and Practicum	16	48	48	132	5
IPEC 300	Interprofessional Education and Collaboration	16	15	-	15	1
Total		**-**	**175**	**168**	**343**	**15**
Second term						
ARAB 201	Issues in Contemporary Arab Culture[GE]	16	48	-	48	3
ELECT	Cultures and Histories[GE]	16	48	-	48	3
ELECT	Human Values[GE]	16	48	-	48	3
Total		-	**144**	**-**	**144**	**9**
Total Credit Hours			**1387**	**508**	**2063**	**103**

Courses may be validated through examination.

Course Descriptions

NURS 200 Introduction to Nursing 2.0; 2 cr.
This course is designed to introduce major concepts that are basic to nursing practice. It familiarizes the student with the nature, history and trends of nursing and the nurses' role in meeting health care needs of society in different settings. This course focuses on concepts related to the nurse, client and health care environment, professional nursing practice, family development and human needs. It uses a combination of face to face (f2f) modules (in class meetings) and online modules (online activities). Fall and Spring.

NURS 201 Introduction to Nursing Practice 1.3; 2 cr.
This course introduces students to concepts and interventions basic to nursing practice. The course uses the nursing process as the organizing framework, and the concepts of health, nursing, client, and environment are integrated throughout. Performance of basic client care skills are emphasized, including the scientific rationale for both health promoting and health restoring nursing interventions. Prerequisites: NURS-200 and HUMR-244.

NURS 202 Health Assessment 1.3; 2 cr.
The course focuses on assessment of health of adults and older adults and provides the student with the knowledge and skills needed to assess the health status of adults and older adults. Emphasis is placed on assessment of the physical, psychosocial, and cultural dimensions of the individual. The course includes lectures and practical experiences in the assessment of individuals to identify normal and abnormal findings. Corequisites: NURS 201 and HUMR 248. Prerequisite: NURS 200. Spring.

NURS 203 Biostatistics for Nurses 3.0; 3 cr.
This course is designed to introduce the BSN students to the concepts and applications of statistics in the nursing field. The course starts with a general overview of probability, types of data, and ways to summarize and present them. The course then introduces the concept of hypothesis testing and the methods to carry them. Applications on the computer using the SPSS software will be discussed in class. Spring.

NURS 205 Foundation of Professional Nursing 2.0; 2 cr.
In this course students will explore recent issues affecting the nursing profession in terms of role expansion of the nurse. The nursing process is covered as an organizing framework for nursing practice.

NURS 210 A Pathophysiology I 1.0; 1 cr.
This course relates normal body functioning to the physiologic changes that occur because of disease, as well as the body's remarkable ability to compensate for these changes. Emphasis is placed on the following: Introductory concepts of Health, disease, pathology and pathophysiology, Inflammation, Cardiovascular and Respiratory pathophysiology, Neoplasia, Immune system, Hematologic, Gastrointestinal and Musculoskeletal pathophysiology. Prerequisites: NURS 201, NURS 202, BIOC 246, HUMR 248, and MBIM 237. Fall.

NURS 210 B Pathophysiology II 1.0; 1 cr.
This course is a continuation of NURS 210A. Emphasis is placed on the following: Genetics and Genomics in Nursing, Neurologic, Sensory, Endocrine, Renal, Integumentary, Hepatic and Biliary pathophysiology, as well as the Infectious Process. Prerequisites: NURS 210A, Spring.

NURS 300 Nursing Care of Adults and Older Adults I, Theory and Practicum 2.2.6; 5 cr.
This course covers scientific principles in the care of adults presenting with medical-surgical problems. It builds on the framework of man, environment, health and nursing. The practicum provides students with opportunities to apply knowledge in clinical practice. Prerequisite: NURS 201 and NURS 202; corequisites: PHRM 240 and NURS 210A. Fall.

NURS 302 Nursing Care of Adults and Older Adults II, Theory and Practicum 2.2.6; 5 cr.
This course is a continuation of NURS 300. Emphasis is placed on the following dysfunctions: metabolic and endocrine, neurologic, eye ear nose and throat, renal and urinary, integumentary, hepatic and biliary, rheumatic, care of the older adult as well as the infectious process. The clinical component reinforces transfer of learnt scientific knowledge to practice fostering effective communication and safe nursing care. Prerequisites: PHRM 240 and NURS 300; corequisite: NURS 210A. Spring.

NURS 304 Nursing Care of the Expectant Family, Theory and Practicum 2.2.6; 5 cr.
This course focuses on reproductive health, from conception to the neonatal period. The content stresses the nurse's role in reproductive health and risk management. The practicum provides clinical application of knowledge, focusing on women in the childbearing cycle, the newborn, and families as clients in the hospital and outpatient settings. Prerequisites: NURS-201 and NURS 202; corequisites: PHRM 240 and NURS 210A. Fall.

NURS 306 Nursing Care of Children, Theory and Practicum 2.2.6; 5 cr.
This course focuses on the care of children, from infancy through adolescence. Topics include ambulatory and in-patient care, as well as primary, secondary and tertiary care. The practicum provides the students with opportunities to assess health needs of children based on knowledge of growth and development, and to implement nursing care, based on the nursing process. The roles of nurse as teacher, patient advocate and nurturer are emphasized. Prerequisites: PHRM 240, NURS 304, and PSYC 210 or EDUC 225; corequisite: NURS 210B. Spring.

NURS 307 Practicum I 0.6; 0 cr.
This course is designed to provide students with opportunities to practice advanced nursing skills learned in previous nursing courses, and builds on experiences gained in the sophomore and junior years. Prerequisites: NURS 302 and NURS 306. Summer.

NURS 308V Maternal Child Nursing, Theory and Practicum 3.8; 6 cr.
This course focuses on the childbearing family from conception to the newborn period as well as primary and tertiary care of the ill child from infancy to adolescence. The clinical component emphasizes the application of knowledge acquired in class in the care of the childbearing family and children with illnesses from infancy to adolescence. Co-requisite: PSYC 210 or EDUC 225.

NURS 311V Nursing Care of Adults and Older Adults, Theory and Practicum 3.8; 6 cr.
Facilitates the development of advanced knowledge and application of scientific principles in the care of clients representing medical–surgical problems of the adult population. This course builds on the framework of person, environment, health status, and nursing. The clinical component provides an opportunity for advanced clinical application of concepts discussed in class in the care of patients and their families.

NURS 312 Mental Health and Psychiatric Nursing, Theory and Practicum 3.6; 5 cr.
The holistic philosophy of clients as bio–psycho–social entities is stressed in both mental health and mental illness. General theories of psychiatry and mental health therapies are presented. The course provides clinical experience in psychiatric–mental health settings.

Emphasis is placed on the quality of coping abilities of clients in varying degrees of stress and crisis. Opportunities are provided for students to work collaboratively with multi–disciplinary health teams to assess, plan, and implement relevant nursing interventions in both mental health and illness. Prerequisites: SOAN 201 and PSYC 201. Fall and Spring.

NURS 313 Leadership and Management in Nursing, Theory and Practicum 3.6; 5 cr.
This course discusses concepts of leadership, management, creativity, analysis, power, change, and evaluation. Students investigate, analyze, and conceptualize the different modalities of leadership, utilizing nursing and management theories. The practicum allows the student to explore his/her role as a potential leader. The learner observes and assists in the practice of different modalities of leadership and managerial skills in a variety of health care settings.

NURS 314 Community Health Nursing, Theory and Practicum 3.6; 5 cr.
The course provides knowledge in the broad area of the field of nursing, public health, and primary health care. The levels of prime concern are the small group, including the family and its individual members, and the large group, including the community. The focus of the clinical component is on the promotion and maintenance of high levels of health and well-being, and prevention of illness and disability. Fall and Spring.

NURS 400 Critical Care Nursing, Theory and Practicum 2.2.4; 4cr.
This course focuses on the care of clients with critical care problems. Emphasis is placed on cardiovascular and respiratory problems, neurologic disturbances, shock, sepsis, metabolic and endocrine imbalances, altered nutrition, renal failure, emergency and disaster nursing. The practicum provides opportunities to apply knowledge in clinical settings. Prerequisites: NURS 302 and NURS 307. Fall.

NURS 402 Psychiatry and Mental Health Nursing, Theory and Practicum 3.6; 5 cr.
This course covers the concepts of psychiatric and mental health disorders and emphasizes the role of the nurse in a psychiatric-mental healthcare setting, using both classroom and clinical instruction. Psychiatric nursing care transcends the bounds of mental hospitals to include general health care settings. Emphasis is placed on basic intervention strategies and the quality of coping abilities of clients in varying degrees of health and illness. Experiences in working with multi-disciplinary health teams is stressed in order to assess, plan, and implement relevant nursing interventions. Prerequisites: Senior standing, SOAN 201, and PSYC 201. Fall and Spring.

NURS 404 Nursing Informatics 2.0; 2 cr.
This course focuses on the history of health care informatics, basic informatics concepts, and health information management applications. The student progresses from developing knowledge of basic concepts and methods of health care informatics; to learning about specific information management applications in health care administration, practice, education, and research; and finally, to a hands-on experience with a specific application of his/her own choosing. Prerequisite: consent of instructor. Fall.

NURS 405V Critical Care Nursing, Theory and Practicum 2.6; 4 cr.
This course addresses the management of critically ill adults. Emphasis is placed on diagnostic reasoning, interventions, and outcome assessment in patients presenting with complex cardiovascular, respiratory, renal and metabolic problems, as well as trauma. The clinical component provides experiences where students apply concepts learned in class in critical care areas in the hospital. Prerequisite: NURS 311V.

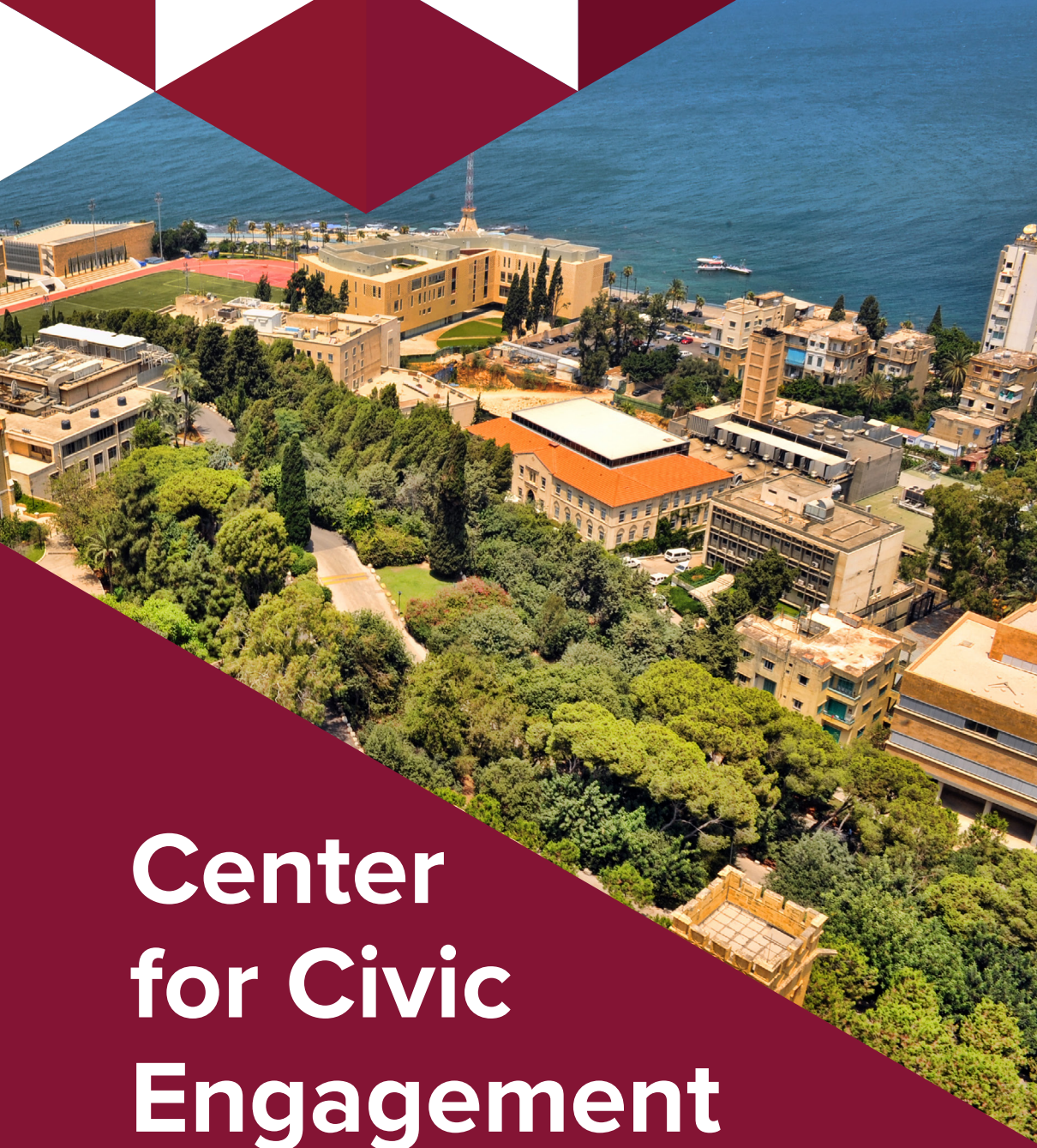
NURS 406 Nursing Research 3.0; 3 cr.
Focuses on the process involved in the scientific approach and its application to nursing. Special emphasis is on the basic research steps, the research design, assessment measures, and data analysis with a focus on research utilization. Prerequisite: NURS 203. Fall. Senior Standing.

NURS 408 Community Health Nurses 3.6; 5 cr.
This course introduces students to the field of community health nursing. The primary target are individuals, families' communities. The competencies acquired in this course enable students through collaboration with other health professionals to provide care on a continuum from health promotion, prevention and maintenance of illness and disability. Prerequisite: SOAN 201; Senior standing. Fall and Spring.

NURS 410 Leadership and Management in Nursing, Theory and Practicum 3.6; 5 cr.
This course discusses how professional nursing incorporates the concepts of leadership, management, creativity, analysis, power, change, and evaluation. In this course students investigate, analyze, and conceptualize the different modalities of leadership, utilizing nursing and management theories. The practicum allows students to explore their role as potential leaders. Students observe and assist in the practice of different modalities of leadership and managerial skills in a variety of health care settings. Prerequisite: Senior standing. Spring.

NURS 411 Intensive Practicum in Area of interest 0.9; 0 cr.
This course focuses on preparing students towards their transition to professional nursing practice. Opportunities are provided for students to synthesize knowledge and refine skills acquired in the planning, provision and evaluation of nursing care, communication, and interdisciplinary practice in a clinical area of their interest. Consent of instructor is required for the site of clinical practice. Prerequisite: Senior standing. Spring.

IPEC 300 Interprofessional Education and Collaboration 1.0; 1 cr.
In this course, students from nursing and public health will learn how population health is best promoted and safe; patient-centered care is best provided through a collaborative health teams approach. This is a required course for senior undergraduate Nursing and Master of Public Health students. The course is case-based on health topics across the life-course on which inter-professional collaboration is necessary. Discussion groups combining public health and nursing students will be moderated by faculty members from the two professions. Students will learn the roles and responsibilities of other health professions and how to function in inter-professional teams. Prerequisites: Senior Standing.



Center for Civic Engagement and Community Services (CCECS)

Director:	Shibli, Rabih
Administrative Assistant:	Bou Fadel, Mireille
Staff and Research Assistants:	Abou Farraj, Lina; Fleihan, Hala; Chahine, Karen; Hajaig, Rabih; Kouzi, Sarah; Bou Matar, Sarah; Dabbous, Lin; Kossaifi, Clara; Massalkhi, Fatima; Ziadeh, Raghda; Al Ajami, Ahmad; El Ali, Qamar; Saleh, Aya

Vision

Positioning AUB as a civic convener and frontline responder to societal conflicts and challenges while realizing the potential of university students as change makers in local and global contexts.

Mission

Leveraging operational research, campus community, and socially responsive partnerships to address societal challenges while equipping students with professional skills for ethical and effective crisis management. This is reflected in three cross-cutting tenets:

1. **Engaged Scholarship Program (ESP):**

   Each year, CCECS guides more than 700 undergraduate and graduate scholarship recipients from Lebanon, the Middle East, Africa, and Afghanistan through a four-track journey beginning with workshops, volunteering rotations, extending to internships, and culminating in the development and implementation of Community Support Projects (CSP). Skills development workshops are sequentially layered according to students' academic standing and in alignment with the ESP milestones. Volunteering rotations allow freshman and sophomore students access to community organizations and direct exposure to services offered to vulnerable communities. Community-based internships provide junior and senior students with specialized opportunities to gain work-like experience over a minimum of 4 weeks. This preparatory experience culminates with a CSP that engages students in a participatory design process with local stakeholders to develop and pilot interventions that respond to pressing challenges facing vulnerable communities.

2. **Fundamental in Civic Engagement (FCE):**

   Under the new General Education Program, the CCECS is developing a three-credit general education course requirement bridging theory with practice, provides students with a five-option pathway to fulfill, namely through, Volunteering Rotations, a Community-Based Internship, Capstone Project, Community Support Project (CSP) and a Service-Learning Course. The common ground of these five options is a one credit online prerequisite course that entails the fundamentals of civic engagement and field reports developed by students; an opportunity to recognize some of the prominent student-led initiatives, that can be used as references to further inspire their peers. Each of these reports starts with a short documentary raising awareness and understanding on a specific societal challenge along with a case study illustrating the global relevance, the national manifestation of its policies and practices, and the local context where a specific site is identified for the pilot project implementation.

3. **Strategic Community Initiatives (SCIs):**

   CCECS plays a leading role in empowering the most vulnerable populations through high impact multi-year interventions, by first identifying themes, setting the roadmap for project development, and establishing strategic partnerships with academia, stakeholders, and funding agencies. Each contextualized SCI is initially a prototype that is meticulously designed to tackle local complexities; it must be flexible, resilient, and positioned in the most appropriate setup for it to thrive. Insights, common practices, and readily available resources within the targeted communities provide invaluable building blocks that increase local buy-in, ownership, and the sustainability of the prototype. Leveraging cutting-edge operational research, SCIs yield tangible solutions that are expandable to cover a wider scope of the same targeted community and are transferable to various locations enduring similar challenges.

AUB's civic engagement through CCECS has earned international recognition. AUB has been designated as the "most civically engaged campus" in the Middle East and North Africa, won the MacJannet Prize for Global Citizenship, the MIT Enterprise Forum 'Innovate for Refugees' Award, as well as the Fritz Redlich Human Rights Award from Harvard University.

Continuing Education Center (CEC)

Background

In line with its mission to serve the region and its commitment to life-long learning, AUB offers a variety of certificate and diploma non-credit programs, non-certificate courses, intensive professional courses, and special programs for all ages as well as students with intellectual disabilities, school-age children, and children of AUB alumni.

All courses pertaining to CEC Certificates involve at least 30 contact hours per course and include at least four courses but can reach up to six courses per certificate. Furthermore, enrolling into a CEC Diploma program requires the completion of the relevant CEC Certificate. Diploma program requirements are usually eight courses (including certificate courses) and can reach up to twelve courses. All CEC courses are designed to include more practical case studies customized for professionals in the specialization area. CEC also offers testing services through its state-of-the-art testing center.

The Continuing Education Center (CEC) at the American University of Beirut promotes AUB's motto "so that they may have life and have it more abundantly" and stands at the heart of AUB's strategic plan in extending the resources of the University into the community by providing high-quality educational opportunities for people of all educational and professional levels.

Mission

The mission of CEC is to meet the lifelong educational and training needs of all learners in the local community in Lebanon, the Middle East and North Africa region and beyond. CEC aims to enhance professional and technical skills of individuals while addressing their needs for personal development and cultural enrichment.

Vision

CEC aspires to become a center of excellence in providing quality education and training in a variety of fields to a diverse population of learners in Lebanon, the Middle East and North Africa region and beyond.

General Criteria for Admission

Students applying to one of the certificate or diploma programs should submit a secondary school or university certificate. Also, a minimum score of 27 in AUB-EN is required for admission. Applicants who are graduates of an English-speaking university are exempted from the English language test. Applicants who sit for the English Language Placement test at the Center and are placed in Level 5 or Level 6 are also allowed to register. An applicant might also be required to report for an interview with the program coordinator.

A student with an AUB-EN score less than 27 will be allowed to take a maximum of two courses in one of the certificate programs provided that s/he sits for the AUB-EN at the end of the first and/or second course and meets the minimum requirements. If the student does not meet the minimum required English score for entry into that program by the end of the second course, s/he will be disqualified from the certificate program and will not be allowed to register for another course in that certificate. The student will have to take more English courses before being allowed to re-register to complete the courses in that certificate program and become eligible for a certificate upon completion of course requirements.

Students applying for enrollment in the English language courses are required to sit for a placement test given at CEC.

Enrollment in all other courses is generally open to all learners from diverse educational backgrounds, unless stated otherwise.

Graduation Requirements for Certificate and Diploma Programs

A certificate or a diploma is offered upon the successful completion of all the required courses and the attainment of a minimum grade of 60 over 100 or (D) in each course along with a minimum cumulative average of 70 over 100 (GPA: 2.2). If the academic requirements change before the student finishes a specified program of study, the student may follow the new requirements upon the approval of the program coordinator.

Testing Center

Mission

The Testing Center plays a vital role in advancing the university's mission statement by offering a high-quality, secure, confidential, and welcoming testing environment to cater to the diverse needs of academics, staff, students, and the general public. Our primary objective is to facilitate access to education and promote academic success by delivering a dependable testing environment that upholds the highest standards of quality and integrity.

Vision

Supporting the University's Mission: The Testing Center actively supports the university's mission statement by enhancing academic excellence through offering high-quality testing services tailored to the needs of students, faculty, and the public.

High-Quality Testing Services: The vision encompasses the continuous enhancement of testing services, committed to providing reliable, accurate, and up-to-date assessments that adhere to the latest testing standards and procedures.

Secure and Confidential Testing Environment: The Testing Center prioritizes the creation of a secure and confidential testing environment to ensure the integrity of test results and safeguard the privacy of test-takers.

Friendly Testing Environment: Envisioning a welcoming and supportive testing environment, reducing test-takers' stress and anxiety to contribute to their overall academic success.

Access to Education and Academic Success: The ultimate vision is to facilitate access to education and promote academic success for all by providing a professional and reliable testing environment, aligning with the university's broader mission.

Services Offered by the Testing Center

The Testing Center offers a diverse range of services, each tailored to address the unique

needs of the academic community and beyond:

Language Proficiency Testing (AUB-EN): Providing language proficiency tests that evaluate English language skills, vital for success in academia and various professional fields. This score offers a general assessment of English language proficiency, specifically designed as the AUB English Entrance exam.

Writing Placement Testing (WT): The center administers writing placement tests designed to help students identify their appropriate academic placement. These tests assess students' ability to read, analyze, and write at the university level. The results guide the selection of the appropriate Communication Skills Program (CSP) writing course, ensuring a strong foundation for academic success.

Language Proficiency Testing for Recruitment (AUB-IET, AUB-EET): Conducting language proficiency tests tailored for recruitment purposes, aiding in selecting candidates with the requisite language skills, crucial for effective communication in professional and academic settings. These assessments are utilized beyond the academic realm, facilitating effective communication and language skills evaluation for various organizational needs.

College-level Skills Testing (ETS® Proficiency Profile): Administering tests that assess essential skills such as critical thinking, reading, writing, and mathematics, with the aim of measuring and enhancing general education student learning outcomes.

Testing for International Organizations (British Council: IELTS, Educational Testing Service: Digital SAT): Facilitating international testing for organizations like IELTS and the Digital SAT, enabling students to meet global standards and opening doors to global educational and professional opportunities.

Proctoring Services for Distance Education (Concordia University, Universitat Pompeu Fabra etc.): Offering proctoring services for students enrolled in distance education courses from other educational institutions, guaranteeing the integrity of examinations.

The Testing Center plays a pivotal role in shaping academic success by ensuring that the assessment process is seamless, secure, and conducive to individual achievement. The Testing Center is committed to maintaining and enhancing these services to meet the ever-evolving needs of the academic community and the broader public.

CEC Rules and Regulations

AUB-EN

Applicants who need to sit for the AUB-EN should register online for the test two days prior to the examination day and pay an exam fee. Test administration is done in Dr. Samer Kamil Al-Rayyes Hall (Nicely Hall Room 500).

Student IDs

CEC students are provided with AUB identification cards, which they should carry while on AUB campus. In case the student loses the ID card that s/he gets upon registration, s/he can get a new one by paying a replacement fee.

Course Offerings

The updated course listing is posted each term on the CEC website. CEC is under no obligation to offer any of the certificate or diploma courses at all times.

Course Cancellations

CEC reserves the right to cancel any course due to insufficient enrolment or other unavoidable circumstances. All registrants will be notified, and a complete refund is made automatically.

Student Withdrawal

For students deciding to withdraw from a course in which they have already registered, fees are refunded according to the CEC refund policy on which the applicant signs. Requests for refunds are not accepted after the third week of classes. Refund checks may take up to four weeks to process.

Attendance

Attendance of all classes is required. CEC instructors will record attendance at the beginning of each session. A student who is absent for more than one fifth of the number of sessions of a course without valid excuse will not be entitled to a final grade for that course. The student will receive a "W" grade. Late arrivals and early departures are tracked by the class instructor, the result of three unexcused late arrivals and/or early departures will be equivalent to a day of absence. Late arrivals and early departures are recorded if the student arrives 15+ minutes late or leaves 15+ minutes before.

Access to University Facilities

- Students enrolled in CEC courses are entitled to use the reading facilities at the university libraries but not to check out books.
- CEC students are not entitled to free access to the Charles Hostler Student Center. Those who wish to join may apply for paid monthly membership.

Examinations

Final Examinations are held within one week of the last class session.

Repeating a Course

A student is not allowed to register for the same course more than two times.

Attestations and Transcripts

Attestations are offered to students who are enrolled in CEC courses. Requests for attestations can be submitted to the CEC office and may take up to three working days to be ready. Transcripts are provided by the Registrar's Office. The student should fill out a

request form and submit it to the Registrar's Office.

Holidays

The CEC follows the AUB calendar with respect to holidays.

AUB Rules and Regulations

All students are expected to abide by the rules and regulations of the University.

Change of Personal Information

Students are encouraged to inform CEC about any changes in their contact information.

Contact CEC

Continuing Education Center, PO Box 11-0236

Riad El Solh 1107 2020 - Beirut, Lebanon

Phone: +961-1-350000 or 374374, ext.3140

+961-1-759675

Email: cec@aub.edu.lb

Website: www.aub.edu.lb/cec

Visit CEC: Nicely, 5th floor

CEC Programs of Study

CEC programs are designed to cater to the personal and professional growth needs of practitioners in a wide variety of areas including business and management, cultural and humanitarian studies, education, fine arts, foreign languages, health care, media and communication, as well as science and technology.

This section elaborates on the courses offered as part of the requirements towards 34 professional CEC Certificates and Diplomas as well as non-certificate courses. Certificate and Diploma programs are categorized according to different specialization areas, listed alphabetically under eight different tracks as shown in the following pages.

Business and Management

Accounting Studies Certificate

Objective

The objective of the accounting studies program is to provide learning opportunities to students who are interested in developing their business career by teaching them

accounting principles, preparing of financial statements for different types of business organizations and enhancing their analytical and technical skills for the purpose of using financial data in decision making. Moreover, the program focuses on the relationship between the company's management and the independent auditors, including the legal responsibilities and liabilities for each party.

Requirements

This program consists of four courses to be completed within two years:

CACT 101	Principles of Accounting I
CACT 201	Principles of Accounting II
CACT 301	Cost Accounting and Control
CACT 302	Auditing

Associate Project Management Certificate

Objective

The Associate Project Management program offers participants the opportunity to define, plan, and execute a project no matter how simple or complex it may be. Participants will acquire the tools and knowledge necessary to deliver successful projects, both on time and within budget, while meeting any performance specifications determined from the onset. Students will examine the key skills of a project manager and learn how to develop and apply those skills for project success. Participants will also learn how to create a project schedule, resource plan and budget, and how to monitor and evaluate a project to manage time, cost, scope, and resources effectively.

Requirements

This program consists of four courses to be completed within two years:

CPRM 102	Emotional Intelligence and Project Leadership
CPRM 103	Project Schedule Management
CPRM 104	Project Stakeholder Engagement and Management
CPRM 216	Project Risk Analysis and Mitigation

Aviation Management Certificate

Objective

The objective of this program is to provide participants with thorough grounding in aviation-related topics which are management, operation, and regulation. The courses are carefully selected to equip the participants with the skills required to pursue a successful career in various sectors of the aviation industry.

Requirements

This program consists of four courses to be completed within two years:

CAVM 101	Air Transport Fundamentals
CAVM 102	Aviation Policy and Regulation
CAVM 103	Aviation Operations Management
CAVM 104	Aviation Safety Management Systems

Essentials of Business Certificate

Objective

The objective of this program is to provide learning opportunities in selected aspects of business with emphasis on modern developments. Some who may consider enrolling in individual courses to continue their professional development will be given attestations of completed courses.

Requirements

The program consists of the following six courses to be completed within three years:

CACT 101	Principles of Accounting I
CMKT 101	Principles of Marketing
CECN 101	Introduction to Economics
CMGT 101	Principles of Management
CECN 301	Money and Banking
CFIN 101	Principles of Finance

Financial Management Certificate

Objective

The objective of this program is to introduce participants to the process of financial decision-making to serve various business objectives in different settings. The program enables participants to deal with financial decisions facing businesses, household savers, and institutional and individual investors. Participants cover the areas of financial management, financial reports, security analysis, and banking activities.

Requirements

The program consists of the following four courses to be completed within two years:

CFIN 101	Principles of Finance
CFIN 301	Financial Statements Analysis
CFIN 302	Investment Analysis
CFIN 303	Commercial Banking

Human Resource Management Certificate

Objective

The objective of this certificate is to offer instruction on practical, current issues in the human resource field for professional development. Increasingly, companies in Lebanon realize that a motivated, appropriately selected, trained, appraised, and compensated workforce is critical to improving company financial performance and success. Human resource professionals facilitate this process through effective management of human resource issues.

Requirements

The Human Resource Certificate requires successful completion of four core courses to be completed within two years:

CHRM 101	Overview of Human Resource Management
CHRM 201	Workforce Planning and Staffing
CHRM 202	Total Compensation and Benefits
CHRM 203	Employee Training and Development

International Commercial Arbitration Certificate

Objective

This program is intended for Lawyers, engineers, contractors, legal directors, corporate counsels from companies involved in international commercial arbitration, professionals and academics aiming for a career or to expand their knowledge in international commercial arbitration. The course will examine arbitration law and practice from a comparative, multi-jurisdictional perspective, and focuses on the theoretical and practical aspects of modern international commercial comparative arbitration.

Requirements

The program is composed of four courses to be completed in two years.

CABT 205	Central Aspects & Agreement to Arbitrate
CABT 206	Arbitral Tribunal, Jurisdiction, Powers, and Process
CABT 207	Applicable Laws of Arbitration
CABT 208	Arbitral Award

Leadership Skills Certificate

Objective

This program aims to introduce participants to the essential skills needed to be successful leaders in the field of social work. Participants will be guided to discover their leadership skills, strengths, and weaknesses. They will also learn how to design their own self-development plans and develop strategies to improve the organizations in which they are working.

Requirements

The program is composed of four courses to be completed within two years:

CLDS 100	Introduction to Leadership Skills
CLDS 202	Emotional Intelligence in Leadership and Management
CLDS 203	Understanding Oneself Understanding Others
CLDS 204	Leading Oneself Leading Others

Marketing Management Certificate

Objective

The objective of this program is to provide participants with an understanding of the marketing-management process. The basic components of marketing, such as consumer behavior, marketing research, product distribution, promotion, and price planning will be emphasized.

Requirements

The program consists of the following four courses to be completed within two years:

CMKT 101	Principles of Marketing
CMKT 202	Marketing Research
CMKT 301	Marketing Communications and Advertising
CMKT 302	Sales Management

Office Management Certificate

Objective

The objective of this program is to develop efficient executive secretaries to facilitate the complex and demanding jobs of today's executives.

Requirements

The program consists of the following four courses to be completed within two years:

CBUS 101	Introduction to Business

CBUS 102	Business English
CBUS 202	Office Procedures and Routines
CBUS 203	Office Automation

Project Management Certificate

Objective

Managing projects has become one of the most important characteristics of modern organizations. This serves to focus responsibility and authority to achieve the organizational goals and retain better control, coordination, communication and customer relations. This certificate program provides participants with the ability to achieve these objectives via effective project management. Participants will master: (i) leadership and communication skills, (ii) project scheduling and cost control principles, (iii) stakeholders categorizing and managing and (iv) risk identification and mitigation.

Requirements

This program consists of the following four courses to be completed within two years:

CPRM 202	Project Leadership and Communication
CPRM 203	Project Management Scheduling and Control Tools
CPRM 204	Project Stakeholder Management
CPRM 316	Project Risk Management

Aviation Management Diploma

Objective

This diploma program equips participants with the skills required to pursue a successful career in various sectors of the air transport industry including airlines, airport companies and authorities, civil aviation departments, and air transport consultancies. The program provides the managerial and practical skills required to assist the participants to become more valuable employees or potential employees to international aviation businesses.

Requirements

The diploma program consists of ten courses divided over two parts which include the Aviation Management Certificate (four courses) plus the diploma focus (six courses). The following are the diploma focus courses to be completed within three years:

CAVM 201	Aviation Strategic Management
CAVM 202	Air Transport Economics
CAVM 203	Aviation Marketing
CAVM 301	Airport Design and Master Planning
CAVM 302	Airline Business Management
CAVM 303	Research Methods and Forecasting in Aviation

Human Resources Management Diploma

Objective

This diploma program provides a comprehensive overview of HRM roles and responsibilities in the workplace from a strategic perspective. It fosters and develops the participants' professional expertise and competencies. This diploma program involves an intensive education program using traditional classroom instruction, hands-on case studies, and executive presentations.

Requirements

This program consists of the following eight courses to be completed within four years:

CHRM 101	Overview of Human Resource Management
CHRM 201	Workforce Planning and Staffing
CHRM 202	Total Compensation and Benefits
CHRM 203	Employee Training and Development
CHRM 301	Managing Human Behavior in Organizations
CHRM 302	Managing the Employment Relationship
CHRM 401	Strategic Management
CHRM 402	Advanced Topics in Human Capital Management

Marketing Management Diploma

Objective

The objective of this diploma is to provide an advanced and comprehensive overview of marketing from basic to strategic. The components of marketing, such as consumer behavior, sales management, marketing communication, marketing research, market segmentation, and strategic marketing planning will be emphasized.

Requirements

The program consists of the following eight courses to be completed within four years:

CMKT 101	Principles of Marketing
CMKT 202	Marketing Research
CMKT 301	Marketing Communications and Advertising
CMKT 302	Sales Management
CMKT 401	Services Marketing
CMKT 402	Public Relations
CMKT 403	Consumer Behavior
CMKT 404	International Marketing

Project Management Diploma

Objective

Upon mastering basic Project Management (PM) skills and techniques in the PM certificate, this diploma offers an advanced and practical project management training in critical areas such as construction planning, financing, and economic feasibility, procurement, supply chain management, and quality assurance.

Requirements

The PM diploma will be granted upon completing the four core courses of the PM certificate (CPRM, 202, 203, 204, and 316) plus five electives from the following list:

CPRM 301	Pre-Project Planning
CPRM 302	Design Project Management
CPRM 303	Construction Project Management
CPRM 304	Construction Contract Administration under the FIDIC Conditions
CPRM 305	Green Project Management and Sustainable Construction
CPRM 311	Technology and Innovation Management
CPRM 312	Program Management
CPRM 313	Project Economic Feasibility
CPRM 314	Managerial Risk and Decision Analysis
CPRM 315	Supply Chain Management

Non-Certificate Business and Management Courses

CNAP 201 Certified Nonprofit Accounting Professional 20 hrs.

Initiated and developed through the National Association of Nonprofit Accountants and Consultants (NPAC), CNAP is the gold standard training for nonprofit financial professionals. CNAP is a turnkey training program that offers professional certification to nonprofit finance office staff. CNAP is now offered in the Middle East by Wegner CPAs, based in the US. The seminar covers practical skills

that can be immediately applied to day-to-day operations, including financial reporting, internal controls, budget development, and governance. The seminar prepares participants to sit for the international exam and acquire the CNAP certification.

CPRM 200 The Certified Associate in Project Management 25 hrs.

This course provides junior project managers with the basic knowledge and preparation required to pass the CAPM certification exam. It follows the outline of the Project Management Body of Knowledge (PMBOK). Each topic is introduced and discussed, with emphasis on the Inputs-Processes-Tools and Techniques-Outputs structure outlined in the PMBOK. This course is approved for credit (25 PDUs) by the Project Management Institute.

CPRM 300 Project Management Professional Course 35 hrs.

This course introduces senior project managers to the science of Project Management and how it applies to their business; and refreshes the knowledge of those who want to sit for the PMP exam. The basic elements of project management will be discussed: PMP logistics, integration management, project scope management, project time management, cost management, quality management, human resource management, communication, risk, procurement, and professional responsibility. Each topic is introduced and discussed with emphasis on the Inputs-Processes-Tools and Techniques-Outputs structure outlined in the PMBOK. This course is approved for credit (35 PDUs) by the Project Management Institute.

CLDS 205 Training of Trainers on Elementary Leadership Skills 30 hrs.

The main objectives of this course are to introduce participants to the essential skills needed for a successful Trainer, and to help them plan implement and evaluate one training course on Elementary Leadership Skills. Main topics include characteristics of a successful training program, research methods for training needs assessment, structure of a training program, managing training problems, characteristics of a successful trainer, and importance of leadership training in development.

CEVP 101 Event Planning 30 hrs.

This course is designed to provide the necessary knowledge and skills an event planner should acquire. It focuses on the fundamentals of event planning, the communication process, and event branding and marketing. The course includes organizing and planning actual events taking place on AUB campus.

CIPE 201 Business Protocol and Etiquette 30 hrs.

This course teaches students how to greet people, converse with them, understand their business and management styles while respecting their cultural attitudes. Topics include: first impressions and networking skills, dressing for success, communication at its best, business lunching and dining etiquette, hosting business potentials, and mastering business meetings.

CLDS 101 Leadership Skills 30 hrs.

The objective of this course is to introduce participants to the essential skills needed to be successful leaders. Participants will be able to determine their leadership qualities and personal responsibilities style. They will also understand their responsibility in developing further as leaders. Participants will learn how to set, evaluate, and follow up on short and long-term objectives. The teacher of this course will use a practical approach emphasizing exercises, discussion, group work, and practical experience. A pre-test will be given at the beginning of the course and a post-test at the end so that participants

will be able to evaluate their leadership skills and plan for improvement.

CLDS 201 Emotional Intelligence 30 hrs.

This course is designed to help participants understand the relationship between emotions and decision-making and their role in developing their own emotional intelligence. The course focuses on the importance of emotional intelligence to our health and leadership qualities. Participants will learn to identify their emotions, express themselves clearly, and understand others. They will also learn how to motivate themselves and others, and how to plan for self-management in order to achieve higher emotional intelligence.

CMKT 501 E-Commerce Management 30 hrs.

In this course and through a hands-on approach, students will learn how to develop, market, and manage an e-commerce business. Students' personal laptops are required.

CSTM 201 Stress and Time Management 25 hrs.

This course is designed to improve the students' productivity and job satisfaction by developing their understanding of the causes and consequences of stress in their work environment. Students will also learn time management strategies such as workload planning and task prioritization. The course includes case studies, real-life examples, and practical sessions.

CCRM 201 Customer Relationship Management 25 hrs.

This course highlights the importance of a customer to the success of any business and discusses the cost of acquiring and/or retaining a customer and the evaluation of the monetary value of a customer. The training also covers the main business challenges that companies face at present, and how CRM helps them address such challenges. This is followed by a detailed discussion of CRM, including implementation strategies, improvement of customer satisfaction / retention, and company profitability.

Cultural and Humanitarian Studies

International Relations and Diplomacy Certificate

Objective

The objective of this program is to provide participants with an in-depth understanding of the theory and practice of international relations within the contemporary interdependent world, while placing a particular emphasis on cultural diplomacy within this framework.

Requirements

This program consists of five courses to be completed within two years:

CCDC 101	International Relations and Diplomacy
CCDC 201	Global Governance and Diplomacy
CCDC 202	Conflict Zone Mediation
CCDC 203	Sustainable Development and the Global Markets
CCDC 204	Cultural Diplomacy by the Arts, Music and Cinema

Humanitarian Certificate

Objective

This certification, in collaboration with DisasterReady, will introduce the Core Humanitarian Principles and Standards as a framework to support local organizations in establishing internal emergency response systems, improving the quality of response, and fostering collaboration. This is a blended certificate; courses are given online and in-person. Face-to-face classes are provided at AUB and the online self-study courses are available free of charge on DisasterReady. For instructions on how to access the online courses, please refer to the DisasterReady Guide.

Requirements

This program consists of four courses to be completed within two years:

CHMN 201	Principles and Standards of Humanitarianism
CHMN 202	Safety, Security and Staff Care
CHMN 203	Humanitarian Programming
CHMN 204	Humanitarian Leadership and Operations

Education

Coaching for School-Based Improvement Certificate

Objective

This program provides training for individuals to become coaches who train school teams on how to lead school-based improvement founded on TAMAM's research-based approach that is customized and grounded in the context of the Arab Region. This program prepares the coaches to acquire the needed skills and competencies to provide continuous guidance and support for the school teams while being coached on TAMAM eleven competencies, skills related to the school improvement journey, and the attitudes required to sustain their commitment to lead school-based improvement. Moreover, this program prepares the coaches with the appropriate approach to monitor the work of the school teams and to provide them with adequate support. The approach also prepares the coaches with the skills to negotiate with the administrators of schools to urge them to provide the teams with supportive conditions that sustain their commitment to engage in TAMAM activities and facilitate their work on leading the school-based improvement even after the gradual withdrawal of the coaches. The Program is based on international literature related to educational leadership and school improvement but is designed to fit the context of the Arab Region and is presented in Arabic Language.

Requirements

The program consists of the following four courses:

CEDU 217	Principles of School Improvement
CEDU 218	Building Capacity to Lead Change

CEDU 219	The School Improvement Journey
CEDU 220	Coaching Roles and Responsibilities

Early Childhood Education Certificate

Objective

The purpose of this certificate is to expose practitioners and prospective teachers in various Early Childhood Education contexts to both theoretical and practical knowledge regarding current trends in early childhood education, child development and teaching, and practices in the field. It also aims to develop the related skills for better performance. New educational programs and approaches are explored in light of findings of new brain research regarding how children learn and develop. The implications for appropriate practices are studied in various areas which include curriculum, methods of instruction, classroom management, parental involvement, and the changing role of the teacher. Special emphasis is placed upon the inquiry method and the development of creative and critical thinking.

Requirements

The program consists of the following four courses to be completed within two years:

CECE 201	Trends in Early Childhood Education
CECE 202	Developmentally Appropriate Practices in the EC Classroom
CECE 203	Curriculum and Planning in Early Childhood Education
CECE 204	Managing the Early Childhood Classroom

Life Centered Education Certificate

Objective

This certificate aims to provide youth and adults with intellectual disabilities with an inclusive university based educational and career guidance program that responds to their needs and prepares them for career attainment. Its courses address subject matters in a variety of life skill courses in addition to computer skills, art and music therapy, and internship hours in selected business platforms.

The certificate's program offers knowledge and skills for students to be effective, independent productive individuals in careers that are best suited to their likes and strengths.

Requirements

The program is composed of the following courses:

CLCE 110	Daily Living Skills I
CLCE 111	Daily Living Skills II
CLCE 112	Self Determination and Interpersonal Skills I

CLCE 113	Self Determination and Interpersonal Skills II
CLCE 114	Functional Math I
CLCE 115	Functional Math II
CLCE 116	Computer Skills I
CLCE 117	Computer Skills II
CLCE 118	Employment Skills I
CLCE 119	Employment Skills II
CLCE 200	Daily Living Skills III
CLCE 201	Daily Living Skills IV
CLCE 202	Self Determination and Interpersonal Skills III
CLCE 203	Self Determination and Interpersonal Skills IV
CLCE 206	Computer and Expressive Arts III
CLCE 207	Computer and Expressive Arts IV
CLCE 208	Functional Math III
CLCE 209	Functional Math IV
CLCE 210	Employment III
CLCE 211	Employment IV
CLCE 300	Daily Living Skills V
CLCE 301	Daily Living Skills VI
CLCE 302	Self Determination and Interpersonal Skills V
CLCE 303	Self Determination and Interpersonal Skills VI
CLCE 306	Computer and Expressive Arts V
CLCE 307	Computer and Expressive Arts VI
CLCE 308	Functional Math V
CLCE 309	Functional Math VI
CLCE 310	Employment Skills V
CLCE 311	Employment Skills VI

Non-Certificate Education Courses

CEDU 200 Leading School-based Improvement 10hrs

This course is an introduction to TAMAM's Capacity-Building Program that aims to prepare educators to lead sustainable school-based improvement. The Program is based on international literature related to educational leadership and school improvement but is designed to fit the context of the Arab Region and is presented in Arabic Language. This course aims at introducing the educational theoretical background for sustainable school-based improvement and the needed principles and strategies to lead improvement. The course describes the characteristics of self-renewing schools, the educator who leads improvement, and the profile of the student we aspire to graduate. The course explains the knowledge, skills, and attitudes that educators need to become agents of change in their educational institutions. It also presents the steps followed to launch an innovative intervention, and the procedure to design, implement and evaluate an improvement project, which are referred to as "TAMAM School Improvement Journey". The course also discusses the challenges that could face the launching of school-based improvement and suggests strategies to overcome these challenges using the leadership competencies and skills for based-improvement. In this course, the participants will engage in interactive activities and reflections that help them understand the nature of the process of leading school-based improvement.

CSAT 201 English for SAT 24 hrs.

This course aims to familiarize students with the English component of the Scholastic Aptitude Test (SAT). It helps them practice their English language skills and vocabulary.

CSAT 202 Math for SAT 24 hrs.

This course aims to familiarize students with the mathematical and reasoning components of the SAT test. It reviews mathematical concepts and helps students practice their basic math and reasoning skills.

Fine Arts

Arabic and Oriental Music Studies (Instrument) Certificate

Objective

Provide a large diverse public (different ages and generations) with no previous musical knowledge, a basic appreciation and practice of Arabic and Oriental Music in its various aspects: theory, history, voice and instruments: wind, string, and percussion.

Requirements

CMUS 106 I	Oriental Music Instrument: Theory and Practice I
CMUS 107 I	Oriental Music Instrument: Theory and Practice II
CMUS 203 I	Oriental Music Instrument: Theory and Practice III
CMUS 204 I	Oriental Music Instrument: Theory and Practice IV

Arabic and Oriental Music Studies (Voice) Certificate

Objective

Provide a large diverse public (different ages and generations) with no previous musical knowledge, a basic appreciation and practice of Arabic and Oriental Music in its various aspects: theory, history, voice and instruments: wind, string, and percussion.

Requirements

CMUS 103 V	Theory and Practice of Voice I
CMUS 104 V	Theory and Practice of Voice II
CMUS 201 V	Voice for Oriental Singing: Theory and Practice I
CMUS 202 V	Voice for Oriental Singing: Theory and Practice II

Interior Design Certificate

Objective

The Interior Design Certificate Program equips students with the methods and skills needed to temper the urgent problems generated by a rapidly growing demography and to create a friendly urban environment. The courses will address the different types of living spaces, the different concepts of interior design, and the different methods for combining aesthetic factors with cost and functional concerns. Graphic illustrations, sketches, case studies, AutoCAD, and real models are used.

Requirements

The program consists of four courses:

CINR 101	Basic Skills for Interior Design
CINR 102	Elements and History of Design Styles
CINR 201	AutoCAD for Interior Designers
CINR 202	Practice of Interior Design

Arabic and Oriental Music Studies Diploma

Objective

This course provides a large diverse public (different ages and generations) with no previous musical knowledge and a basic appreciation and practice of Arabic and Oriental Music in its various aspects: theory, history, voice and instruments: wind, string, and percussion. Holders of the Diploma will be at the level of music performers within an Ensemble.

Requirements

Students should complete one of the certificate music programs and the following courses:

CMUS 301 V	Voice for Oriental Music: Theory and Practice III

CMUS 302 V	Voice for Oriental Music: Theory and Practice IV
CMUS 303 I	Oriental Music Instrument: Theory and Practice V
CMUS 304 I	Oriental Music Instrument: Theory and Practice VI
CMUS 305	Oriental Music Ensemble Practice I
CMUS 306	Oriental Music Ensemble Practice II

Interior Design Diploma

Objective

This diploma program equips students with the methods and skills needed to temper the urgent problems generated by a rapidly growing demography and to create a friendly urban environment. The courses will address the different types of living spaces, the different concepts of interior design, and the different methods for combining aesthetic factors with cost and functional concerns. Graphic illustrations, sketches, case studies, AutoCAD, and real models will be used.

Requirements

This program consists of the following eight courses to be completed within four years:

CINR 101	Basic Skills for Interior Design
CINR 102	Elements and History of Design Styles
CINR 103	Drawing and Rendering for Interior Spaces
CINR 201	AutoCAD for Interior Designers
CINR 202	Practice of Interior Design
CINR 203	Technical Detailing and Executing Drawing
CINR 301	Advanced Interior Architecture Project
CINR 302	Supervised Research Project

Non-Certificate Fine Arts Courses

CINR 303 Digital Rendering for Interior Designers 24 hrs.

This course concentrates on transforming the technical drawings into client friendly, readable and attractive presentations. It teaches students who already know AutoCAD how to transfer CAD drawings into color rendered images using both AutoCAD and Photoshop programs.

CART 101 Introduction to Arts Policy and Management 36 hrs.

This course introduces the main concepts related to arts policy and management, giving an overview of the fundamentals of arts policy as well as essential concepts related to third sector arts and cultural organizations management.

CART 201 History of Arts 36 hrs.

This course is an introduction to the art of the twentieth century. It focuses on the approaches and methodologies used in the Dadaist and the Surrealist movements in visual art and literature. The course covers the sources and influences of the major artists. Styles and movements of this period are closely examined. Emphasis is on discussion of pioneering attitudes, theories, and concepts of the art world with topics ranging from a focus on artists and media, art politics, and various thematic concerns. Seminars, workshops and lectures diversify the course.

CDRW 101 Life Drawing I 36 hrs.

This course concentrates on “seeing” and rendering with pencil and charcoal. Special emphasis is placed on still life taken from nature and landscapes.

CMUS 100 Basic Sight Reading and Solfeggio 15 hrs.

This course is an introduction to basic notation reading skills needed in performance practice. The course could be waived with the recommendation of the instructor of practice courses if the student has prior knowledge of music notation and sight reading.

CMUS 101 History and Appreciation of Oriental Music I (Antiquity - 19th century) 25 hrs.

This course is a survey of the practice and theories of music in West Asia and the Eastern Mediterranean from Antiquity till the late 19th century, with a focus on the Mashriq. Readings and recordings are used to illustrate the important styles, forms, modes, rhythms, and instruments. Music is studied as part of the wider social, political, economic, and cultural context. The course highlights the role of cultural exchange in influencing the development of music practice and theory.

CMUS 102 History and Appreciation of Oriental Music II (19th and 20th century) 25 hrs.

This course is a survey of the practice and theories of music in Egypt and the Mashriq. Readings and recordings are used to illustrate the select case studies. Music is studied as part of the wider social, political, economic, and cultural context, with a particular focus on the concept of heritage and nation building. The course highlights the role of composers and practitioners, and the impact of recordings, radio, television and music festivals.

CMUS 105 Digital Audio Course 25 hrs.

This course shows students how to create music using computers, keyboards, and industry-standard audio software. It deals with notation software such as Sibelius or Finale, and as well as sampling and MIDI recording and arranging software such as Cubase or logic. Besides general topics in music notation, and software use, the course will cover the basics of recording and audio editing.

CSKT 101 Sketching 36 hrs.

In this course, students will learn how to execute a free hand drawing that is not intended as a finished work. They will be introduced to perspective, proportions, scales, and composition.

Foreign Languages

English Language

Courses are offered at all levels from beginners to advanced with emphasis on communication competence. Students who complete Level 7 are often able to pass the AUB-EN. Each student's level is determined by a placement test given to all new applicants before the session begins.

CENG 101	English Language Level 1	42 hrs.
CENG 102	English Language Level 2	42 hrs.
CENG 103	English Language Level 3	42 hrs.
CENG 104	English Language Level 4	42 hrs.
CENG 105	English Language Level 5	42 hrs.
CENG 106	English Language Level 6	42 hrs.
CENG 107	English Language Level 7	42 hrs.

اللغة الإنجليزية

المستوى: الاول حتى السابع.

الـــدوام: الخامسة والنصف حتى الثامنة والنصف مساء.

دورة مكثفة في اللغة الإنجليزية تهدف الى تمكين المشتركين فيها من أصول اللغة في القراءة والكتابة والقواعد والمحادثة، وهي تشمل عدة مستويات يوزع الطالب فيها وفقا لمدى إلمام كل منهم بها.

تحدد مستويات الطالب بناء على نتائجهم في امتحان خاص للتصنيف يجرى قبل إتمامهم عمليات التسجيل للدورة.

English Language

CENG 201 Conversational English 36 hrs.

This course offers students the opportunity to speak in formal and informal situations. Throughout the course, students will participate in discussions, group activities, and simulated role-playing. They will also give and evaluate presentations.

CENG 202 Creative Writing 30 hrs.

This course provides participants with the opportunity to apply and extend their creative writing skills in a workshop setting through a series of directed writing activities and in-class discussions. Genre-specific writing will be addressed allowing participants to pursue specific interests in writing fiction, creative non-fiction, memoir and/or poetry. Developing voice and revision will be important components of this course. Participants will also learn how to prepare a piece of writing for publication and will examine the publishing opportunities available to writers.

CENG 203 Public Speaking 42 hrs.

This course focuses on the fundamentals of oral communication which involves preparation and presentation of conventional forms of public address, such as expository and persuasive speaking. Emphasis is placed on the use of correct and effective language and organizational skills in preparing, delivering and evaluating different types of oral presentations. Prerequisite: CENG 107 or equivalent.

CENG 204 Communication Skills 36 hrs.

This course is designed to teach participants different communication techniques and skills in the areas of time management, note-taking, proofreading, editing and copywriting of business, medical, legal, journalistic and economic texts and writings. Participants will practice their communication skills by listening to lectures and dialogues among professionals. They will also write, edit and proofread various documents, abstracts and short papers, and will learn to present orally using the latest technology. Prerequisite: CENG 106 or equivalent.

CENG 205 Basic English for Law 48 hrs.

This course helps lawyers, law school professors, law school students, contractors, paralegals, business professionals and other legal professionals with an interest in learning the legal English to improve their legal English language skills and master the legal terminologies, phrases, collocations and structures. It intends to teach the participants the language of law while learning about the Lebanese and the American judicial systems.

CENG 206 Business English Communication Skills 72 hrs.

This course will primarily be developing students' communication skills in working life and will be developing their vocabulary and knowledge of an integrated use of tenses and forms in the business world. Students will develop their ability to use questions and answers in real-life situations such as formal and/or informal meetings. They will also develop discussion skills using appropriate tenses and common expressions conveniently, which will enable them to be confident in social encounters. Students will be able to use correct English in authentic business settings, including, but not limited to, written communication, through networking by phone, and in face-to-face situations. Applicants eligible for this course must have a score of 29 on the AUB-EN; otherwise, candidates will sit for a placement test at the CEC.

Arabic Language

CARB 204 Arabic for Foreigners I 42 hrs.

This course offers a departure from traditional Arabic programs in its integration of colloquial Arabic with Modern Standard Arabic (MSA) in a way that reflects the use of the language by native speakers. In everyday situations, Arabs communicate in the colloquial and use MSA for reading, writing, and formal speech. This course begins with spoken Arabic and uses it for ordinary conversation throughout the course and gradually integrates MSA through graded reading selections. Emphasis is on real communication and on developing proficiency in the language by using it in meaningful contexts rather than on the study of grammar.

CARB 205 Arabic for Foreigners II 42 hrs.

This course is a continuation of CARB 204 through the extensive use of graded materials on a wide variety of topics. Special attention is given to developing native-like pronunciation and to grammatical accuracy. The focus will be on encouraging fluency and facility in understanding the language and communicating ideas in it. In addition to building on the linguistic foundation, the course continues the practice of introducing students to the Arab society, history, and culture using folk tales, songs, poems, and short stories depicting different aspects of Arab life and culture.

Other Languages

CFRN 101 French I 36 hrs.

This course provides students with the chance to use the language in familiar contexts both orally and in writing. In Level One, the emphasis is on conversations using basic structures.

CFRN 102 French II 36 hrs.

This course provides students with the chance to use the language in familiar contexts both orally and in writing. In Level Two, the student will be able to read and write simple texts.

CGER 101 German I 36 hrs.

In this course, students will learn basic vocabulary and sentence formation that will enable them to participate in simple conversations.

CGER 102 German II 36 hrs.

In this course, students will learn the basics for writing and conversing in a more professional way. Prerequisite: German I.

CHNS 101 Chinese I 36 hrs.

This course provides students with basic working knowledge of Chinese (Mandarin). The course exposes beginners to Chinese Pinyin (spelling with one tone), Chinese characters, Chinese grammar, commonly-used sentence structures, and simple situational dialogues.

CHNS 102 Chinese II 36 hrs.

This course is a continuation of Chinese I. Students will learn more characters, grammar, sentence structures, and dialogues; and they will practice simple applied writing. Prerequisite: Chinese I.

CITL 101 Italian 36 hrs.

This course provides students with a basic knowledge of Italian and foundation for speaking, reading, and writing the language.

CSPN 101 Spanish I 36 hrs.

This course is designed to provide students with a basic knowledge of Spanish, both of its conversational form and of the elementary grammatical structure. By the end of the course, student will be able to engage in simple conversation, read short articles, and write letters and simple compositions.

CSPN 102 Spanish II 36 hrs.

This course aims to enhance students' skills of speaking, listening, reading, and writing. Students who complete this course should be able to communicate in a more professional way. Prerequisite: Spanish I.

Health Care

Community Health Nursing Certificate

Objective

The post-basic certificate program in community health nursing is designed to provide students with theories of nursing and principles underlying current community health nursing practice. The focus of care is on clients who may be represented as individuals, families, and small groups or larger aggregates and community. The nursing role is developed with emphasis on health maintenance, health promotion, and disease prevention as facilitated by health teaching and appropriate use of community resources. Critical inquiry using nursing research and epidemiological processes is fostered by didactic and clinical learning experiences. Clinical experiences are designed to enhance collaborating effectively with interdisciplinary team members in health care settings.

Concepts and theory are learned through various combinations of classroom discussions, lectures, and seminars, case studies, independent study, and guided application in practice. The faculty will carry responsibility in the area of clinical practice through consulting services and participating in demonstrations. Emphasis is placed on the use of community sites, including ambulatory care centers, homes, and schools, collaborative activities with Community Institutions and group teaching. The program includes 90 theory contact-hours and 180 clinical contact-hours.

Requirements

The post-basic Community Health Nursing Certificate program consists of four courses:

CNRS 311	Introduction to Community Health Nursing
CNRS 312	Practicum I: Application of Theories and Concepts
CNRS 313	Advanced Concepts and Issues Relevant to Community/Public Health Nursing
CNRS 314	Practicum II: Planning and Evaluation of Community Based Interventions

Critical Care Nursing Certificate

Objective

The program is designed to build on the knowledge and clinical experience of nurses. It consists of 90 theory contact-hours and 90 clinical contact-hours. The theory part tackles concepts and issues related to assessment, care, and evaluation of critically ill adults. The practicum part includes application of critical care concepts in assessing and managing evidence-based care to critically ill clients. Areas of emphasis include nursing assessment, interventions, and evaluation in critical illness, ventilatory assistance, hemodynamic monitoring, dysrhythmias, and EKG interpretation.

The program is based on the nursing process as a framework for building theoretical knowledge and applying nursing care. Concepts such as critical care environment, relationship with patient and family, end-of-life care, infection control and safety, communication, documentation, and critical thinking will be integrated in this course. Reading and understanding nursing research, doing library search and using information technology to enhance learning will be incorporated.

Requirements

The post basic Critical Care Nursing Certificate program consists of six courses:

CNRS 315	Fundamental of Critical Care Nursing
CNRS 316	Nursing Care Management of the Critically Ill Adult
CNRS 317	Nursing Management of Acute Medical Surgical Emergencies
CNRS 318	Practicum I: Critical Care Nursing: Assessment and Evaluation
CNRS 319	Practicum II: Critical Care Nursing: Management
CNRS 320	Practicum III: Code Management

Leadership and Management in Nursing Certificate

Objective

This program helps build the managerial capacity of nurse managers or nurses in charge of leading and managing skills to ensure success in today's dynamic healthcare environment. It emphasizes the use of creativity in problem solving and decision-making, thus promoting critical thinking, an essential element in the nursing process. It introduces nurses to the change process and control measures which contribute to the improvement of nursing practice. This program allows the nurses to examine their role as leaders in today's rapidly changing healthcare environment.

Requirements

The program consists of five courses:

CNRS 301	Foundations of Leadership and Management in Nursing
CNRS 302	Leading Towards Effective Patient Care Management
CNRS 303	Managing Quality Improvement
CNRS 304	Advanced Management Practice
CNRS 305	Practicum

Nursing Informatics Certificate

Objective

The post basic certificate in Nursing Informatics is designed to provide students with the knowledge and skills necessary to take a leadership role in the selection and implementation of health care information management systems and in applying the knowledge gained from the information generated from these systems. This program entails five courses which focus on concepts and issues surrounding technology and information management in today's rapidly changing health care environment.

Requirements

The post basic NI program consists of five courses:

CNRS 306	Data, Information and Knowledge
CNRS 307	Informatics and the Health Care Delivery System
CNRS 308	System Lifecycle
CNRS 309	Issues in Health Care Informatics
CNRS 310	Data Standards, Terminologies and Implications for Practice

Media and Communication

Journalism Certificate

Objective

This certificate offers a comprehensive insight into the theories and practices of journalism in the digital era. Its courses address a variety of areas, including media law, ethics of reporting, digital storytelling, visual media production, investigative journalism, mobile reporting, cyber activism, in addition to other relevant fields in modern journalism. The certificate's program aims to advance the participants' skills and capabilities when reporting on multimedia platforms.

Requirements

The program is composed of four courses in journalism.

CJRN 201	Media Law and Ethics
CJRN 202	Investigative Journalism
CJRN 203	Mobile Reporting
CJRN 204	Multimedia Journalism

Strategic Communication Certificate

Objective

This certificate provides an overview of strategic communication skills and requirements in traditional media, social media, as well as corporate sector institutions. The courses address topics that range from interpersonal communication skills, public speaking, public relations, campaigning, image production, branding, in addition to variety of advertising and marketing techniques. The certificate aims to boost the participants' capabilities in terms of constructing, packaging, promoting and selling ideas in competitive marketplaces.

Requirements

This program consists of four courses in strategic communication:

CSTC 201	Public Relations
CSTC 202	Communication Campaigns
CSTC 203	Corporate Identity and Branding
CSTC 204	Interpersonal Communication

Journalism and Strategic Communication Diploma

Objective

The Certificate offers a comprehensive insight into the practices of journalism in the digital age. The courses address a wide range of issues related to media ethics, digital storytelling, visual media production, investigative journalism, mobile reporting, in addition to other relevant fields in journalism. Through its diverse topics, rigorous content and interactive exercises, the program aims to advance the participants' skills and expertise when creating content for multimedia platforms.

Requirements

The program is composed of eight courses: four in journalism, and four in strategic communication. In other words, to complete this diploma program, students must complete the Journalism certificate and the Strategic Communication certificate.

CJRN 201	Media Law and Ethics
CJRN 202	Investigative Journalism
CJRN 203	Mobile Reporting
CJRN 204	Multimedia Journalism
CSTC 201	Public Relations

CSTC 202	Communication Campaigns
CSTC 203	Corporate Identity and Branding
CSTC 204	Interpersonal Communication

Science and Technology

Mobile Application Development Certificate

Objective

The objective of this certificate is to teach students the skills needed to advance in a career of mobile application design and development.

Requirements

This program consists of four courses to be completed within two years.

CMAD 200	Developing Hybrid Mobile Apps with PhoneGap
CMAD 201	Developing Android Apps
CMAD 202	Developing iOS Apps
CMAD 203	Developing Windows Phone Apps

Web Application Development Certificate

Objective

The objective of this certificate is to enable students with the skills needed to advance in a career of web application design and development and, eventually, architecture. Students will be creating high standard, performance and secure real-world web application projects that will involve interacting with databases, such as MySQL and MS SQLSERVER as well as Cloud Databases.

Requirements

This program consists of six courses to be completed within three years.

CWAD 200	Programming in HTML5 with JavaScript and CSS3
CWAD 201	Developing Windows Azure and Web Services
CWAD 202	Developing ASP.NET MVC Web Applications
CWAD 203	Developing PHP Web Applications
CWAD 204	Developing Node.js Applications
CWAD 205	Developing Single Page Applications with AngularJS

Certificate and Diploma Programs Course Descriptions

CABT 205 Central Aspects & Agreement to Arbitrate 30hrs.

This course provides a thorough understanding of arbitration in comparison to other ADR mechanisms and litigation, definitions of arbitration, concepts of arbitration, juridical nature of arbitration, delocalized arbitration, international and domestic arbitration, institutional and ad hoc arbitration, disputes resolved “ex aequo et bono”, the relationship between state courts and international arbitration, legal issues relating to arbitration agreements, concepts of Arbitrability, Separability, and State Immunity implications on arbitration.

CABT 206 Arbitral Tribunal, Jurisdiction, Powers, and Process 30hrs.

This course provides a comprehensive discussion of all major issues relating to the arbitration tribunal, appropriate number of arbitrators and appointment procedures, main rights and obligations of arbitrators and the parties to an arbitration, understand the various theories for the source of rights and obligations of arbitration tribunals, liability of arbitrators and arbitration institutions, challenge and replacement of arbitrators, arbitration proceedings from both theoretical and practical perspectives, the effect of the commencement of arbitration, the importance and content of preliminary meetings and orders, with review of terms of reference, the role and style of written submissions, the procedure at hearings before arbitrators, hearings in international commercial arbitration, and the rules of evidence as applied in international commercial arbitration.

CABT 207 Applicable Laws of Arbitration 30hrs.

This course provides a thorough understanding of the implication of conflict of laws in international commercial arbitration, discusses how applicable law is determined in international arbitration, methods of determining applicable law by the arbitration tribunal, the application of national laws and “Contrat Sans Loi”, the relevance of mandatory rules in arbitration and the importance of public policy considerations, the content of applicable substantive law, the lex mercatoria, its sources and principles, the application of general principles of law in international arbitration, the application of extra-legal standards, Lex Arbitri and Curial Law, and law applicable to arbitrability.

CABT 208 Arbitral Award 30hrs.

This course provides an in-depth evaluation of the requirements relating to form, content and delivery of awards, the appeal of the arbitral award, the circumstances for a challenge to an award and relevant and competent courts for such challenges, the recognition and enforcement of domestic and foreign awards, the grounds and procedure to refuse enforcement of foreign awards, and a comprehensive examination of the 1958 New York Convention and other conventions.

CACT 101 Principles of Accounting I 30 hrs.

This course introduces students to principles of recording transactions, the preparation of financial statements, and completion of the accounting cycle.

CACT 201 Principles of Accounting II 30 hrs.

This course is a continuation of Accounting I. It covers depreciation policies and procedures, depletion and amortization, income determination, partnership accounts, corporate capital accounts, dividends and retained earnings.

CACT 301 Cost Accounting and Control 30 hrs.

This course focuses on the nature and purpose of cost accounting; basic techniques of process and job costing; accounting of materials, labor and overhead; development and use of cost budgets and standards for planning and evaluation of performance; cost classification in relation to behavior; and cost condition statements as tools for evaluating alternative courses of action.

CACT 302 Auditing 30 hrs.

This course focuses on the principles and procedures covering the public accountant's responsibilities in examining and reporting on financial statements of business concerns, including professional ethics, legal responsibility scope, and application of audit procedures.

CAVM 101 Air Transport Fundamentals 30 hrs.

This course Studies how the air transportation system relates to airlines, airports, Civil Aviation Authorities (CAAs) and Air Navigation Services (ANS).

CACT 302 Auditing 30 hrs.

This course focuses on the principles and procedures covering the public accountant's responsibilities in examining and reporting on financial statements of business concerns, including professional ethics, legal responsibility scope, and application of audit procedures.

CAVM 101 Air Transport Fundamentals 30 hrs.

This course Studies how the air transportation system relates to airlines, airports, Civil Aviation Authorities (CAAs) and Air Navigation Services (ANS).

CAVM 102 Aviation Policy and Regulation 30 hrs.

Students obtain the necessary skills to understand and manage civil aviation policy and regulation.

CAVM 103 Aviation Operations Management 30 hrs.

This course strengthens students' understanding of the key airline and airport management principles by drawing on the best practices shared by industry experts.

CAVM 104 Aviation Safety Management Systems 30 hrs.

This course will help learners understand the function, role and importance of developing and implementing a Safety Management System (SMS).

CAVM 201 Aviation Strategic Management 30 hrs.

Students will learn the latest in strategic planning for aviation authorities and aviation related industries and benefit from comprehensive case studies.

CAVM 203 Aviation Marketing 30 hrs.

Growing uncertainty and competition in the global aviation industry is forcing airlines and airports to reinvent their marketing strategies. This course looks at the latest airline and airport marketing and commercial trends to assist participants in revamping their marketing practices.

CAVM 301 Airport Design and Master Planning 30 hrs.

This course provides the principles of airport master planning and demand forecasting. It presents common approaches to design and implement reliable ground access, airside facilities, passenger processes, as well as security and baggage systems.

CAVM 302 Airline Business Management 30 hrs.

This course provides an analytical perspective of various airline strategies and business models. Participants learn how airlines are managed and operated in a competitive global environment.

CAVM 303 Research Methods and Forecasting in Aviation 30 hrs.

This course provides participants with the theories and methods of research in the aviation industry. A range of both quantitative and qualitative methodologies is explored, and various techniques for aviation research are examined.

CBUS 101 Introduction to Business 30 hrs.

The purpose of this course is to provide students with the opportunity to study many dimensions of the business system. Subjects covered include management and organization, human resource management, information for business decision-making, financial information, and business and its environment.

CBUS 102 Business English 30hrs.

The purpose of this course is to focus on the communication requirements of participants in business situations in order to project a professional image and avoid costly mistakes. Guided activities include problem-solving, information transfer tasks, role playing and transfers to participants' work environments to develop confidence in applying common uses of language structures, business terminology, and expressions.

CBUS 202 Office Procedures and Routines 30hrs.

The purpose of this course is to present fundamental principles and successful practices for completing office work effectively and efficiently. Subjects covered include techniques for general secretarial duties, such as filing, information processing skills, preparing and publishing reports, handling mail and electronic messages, using effective telecommunication practices, making meeting arrangements, making travel arrangements, keeping company books and records, and maintaining good human relations proper etiquette.

CBUS 203 Office Automation 30hrs.

This course is intended to introduce students to computer office automation systems which are designed primarily to improve office productivity and efficiency. It focuses on topics like managing documents, electronic filing systems, electronic mail, maintaining calendars and appointments, and word processing using Microsoft Word (advanced features like manipulating tables, merging documents, using style, outline, footnotes, pictures) and spreadsheets using Microsoft Excel (advanced features like formulas, functions, charts, page setup, database management, filtering).

CCDC 101 International Relations and Diplomacy 30 hrs.

This course provides participants with the fundamental knowledge needed in the field of Cultural Diplomacy and International Relations, with a particular emphasis on the application of Cultural Diplomacy in the framework of foreign policy and as practiced by the private sector and civil

society. The course uses a historical and case study approach and addresses the most important contemporary international issues.

CCDC 201 Global Governance and Diplomacy 30 hrs.

This course provides participants with a substantial knowledge of Cultural Diplomacy as practiced by global governance institutions and international organizations around the world. A particular emphasis is put on Cultural Diplomacy's role in global governance to improve the ways in which the diversity of cultures can properly understand each other and to facilitate cooperation more effectively at the political economic, and cultural levels. The course provides analysis of the practice of Cultural Diplomacy at the multilateral level by examining specific case studies of global governance organizations and international organizations.

CCDC 202 Conflict Zone Mediation 30 hrs.

The course provides a thorough background in Cultural Diplomacy, using a historical and case study approach, while further accentuating the role and potential of Cultural Diplomacy in conflict resolution and mediation, with the end goal of strengthening international relations. It addresses contemporary international issues, with classroom lectures and seminars supplemented by lectures and briefings at international and non-governmental organizations; educational events, conferences, tours, and meetings with foreign officials are further incorporated into the curriculum. In addition, the program allows participants the opportunity to attend all ICD conferences, events, presentations, and other activities.

CCDC 203 Sustainable Development and the Global Markets 30 hrs.

The course provides participants with the fundamental knowledge needed in the field of Cultural Diplomacy and International Economics, with a particular emphasis on the role of Cultural Diplomacy in the economic policies of Nation States; the encouragement of sustainable tourism; the use of Cultural Diplomacy in the development of national brands; the international dimension of Corporate Social Responsibility (CSR) and Socially Responsible Investment (SRI); and the global economics and Environmental Responsibility. In particular, the course provides a thorough background in the practice of Cultural Diplomacy in international trade, nation branding, tourism, the engagement of international corporations & business, fostering entrepreneurship and building cultural economic bridges between nations and groups of nations.

CCDC 204 Cultural Diplomacy by the Arts, Music and Cinema 30 hrs.

This course provides participants with core knowledge in the field of Cultural Diplomacy, with a special emphasis on the use of the arts, music and cinema as methods of cultural diplomacy. It combines both theory and practical case studies from a wide variety of fields, such as international relations, diplomacy, the humanities, and culture. It also provides a thorough analysis of a diverse selection of cultural diplomacy institutions and the application of cultural diplomacy in the framework of foreign policy, domestic policy and multiculturalism.

CEDU 217 Principles of School Improvement 30 hrs.

This course aims at introducing the educational theoretical background for sustainable school-based improvement and the needed principals and strategies to initiate, implement, and transform the innovative interventions into sustainable practices that support sustainable self-renewal of schools. The course describes the characteristics of self-renewing schools, the educator who leads improvement, and the profile of the student we aspire to graduate. This course also introduces the TAMAM coaching approach and explains the coaches' roles and

responsibilities while training the school teams to follow the TAMAM research-based and contextualized approach to leading school based-improvement. The course illustrates the personal and professional characteristics and the technical skills individuals should exhibit to become a successful coach for school-based improvement.

CEDU 218 Building Capacity to Lead Change 30 hrs.

This course aims to provide coaches with the strategies used to train school teams on the TAMAM eleven competencies. The course provides a deep explanation to the knowledge, skills, and attitudes of each of the TAMAM eleven competencies and presents tips for the coaches to guide them in training the school teams. The course also presents the available resources and coaching modules related to these competencies.

CEDU 219 The school Improvement Journey 30 hrs.

This course aims to provide coaches with the strategies used to train school teams on the TAMAM School Improvement Journey that school teams follow to design an improvement project. The course provides a deep explanation to each station of the TAMAM school improvement journey and presents the available resources and coaching modules related to these competencies. The course also presents tips for the coaches to guide them in training the school teams and highlights the major aspects and challenges that coaches should be aware of.

CEDU 220 Coaching Roles and Responsibilities 30 hrs.

This course aims at introducing the steps on the coaching journey that the coaches follow to design, monitor and implement the coaching plan. The course trains the coaches on how to collect data about the school and its team, how to analyze the collected data to identify the coaching needs, how to design the coaching plan based on needs, and how to plan for the teams' learning experiences. The course also trains the coaches on how to collect data about the team's progress to monitor and evaluate their work on the improvement journey, their acquisition of the TAMAM competencies, and their motivation to work on improvement. This course also discusses the coaches' role in coordinating with expert coaches who train and support the team in special topics and areas related to their improvement project. Throughout this course, the participants will be introduced to the training modules and resources available at TAMAM, in addition to the templates and tools that coaches, and the team members can use for data collection, analysis or documentation.

CECE 201 Trends in Early Childhood Education 30 hrs.

This course will lay the foundation for understanding the field of early childhood education. Topics cover the following key areas of professional knowledge: a history and theoretical foundation of early care and education, types of early childhood programs and settings, child growth and development, an overview of the profession, professional responsibilities and ethical conduct, and current trends and issues in ECE. This course provides a basic introduction to the nature of human growth and development as it occurs from conception through early childhood. Students learn about motor, cognitive, social, emotional, moral, aesthetic, and language development in early childhood. The course will lead its way to the importance of developmentally appropriate practices (DAP) in the field.

CECE 202 Developmentally Appropriate Practices in the EC classroom 30 hrs.

This course covers an overview of developmentally appropriate practices and standards in early childhood education programs. The course begins with students discussing the major

developmental stages, domains, and milestones of child development, while exploring the significant role and impact of play on the social, emotional, physical, and intellectual growth and development of young children. Using this strategy, students will become familiar with content of various subject matter areas (including math, science, social studies, language, art, music, movement, and outdoor play) to develop appropriate activities and foster optimal learning in preschool children.

CECE 203 Curriculum and Planning in Early Childhood Education 30 hrs.

This course focuses on curriculum development and teaching strategies with a developmentally appropriate approach in early childhood contexts. Students will understand where the curriculum comes from and what are the different types of planning. This course focuses on methods of planning developmentally appropriate curriculum for preschool age children. Topics include curriculum development, thematic planning, daily schedules, lesson planning, evaluation of curriculum effectiveness, and the role of the teacher in facilitating curriculum for preschool children.

CECE 204 Managing the Early Childhood Classroom 30 hrs.

This course will address age-appropriate behavior expectations for classrooms and ideas for supporting student learning. Different factors that play a role in classroom management will be explored in depth, bringing together all previous learning related to ECE. Motivation theory, positive reinforcement and behavior support plans will be covered. Major theories of behavior will be considered as they relate to educational settings.

CECN 101 Introduction to Economics 30 hrs.

This course is a survey of economic principles that include national income accounting and analysis, monetary and fiscal policies, and demand and supply analysis.

CECN 301 Money and Banking 30 hrs.

This course focuses on management of commercial banks, the structure of commercial banking, management of bank funds and the role of money in the economy.

CJRN 201 Media Law and Ethics 30 hrs.

This course addresses media ethics as globally understood and standardized. It engages with the most common ethical dilemmas that journalists and other media practitioners face in their career, in theory and practice. In addition, the course examines the basic legal guidelines that govern the media industry and the variations in these guidelines across different countries. The course aims to delineate the interrelation between ethics and law in the digital age. It addresses issues pertaining to freedom of expression, defamation, copyright violations, invasion of privacy, and violent media representations. The course also explores the social responsibilities of journalists and editors on multimedia platforms.

CFIN 101 Principles of Finance 30 hrs.

This course is an introduction to the field of financial management, including the institutional framework of finance, the role of finance in the business firm, financial analysis, planning and control, working capital management, cash budgeting, and elements of capital budgeting.

CFIN 301 Financial Statements Analysis 30 hrs.

This course focuses on the description and interpretation of reported and audited financial statements, limitations of company reports, analysis of financial ratios, examinations of professional practices regarding measurement and disclosure of financial information, and development of skills needed to read, analyze and evaluate financial statements. Prerequisite: CFIN 101.

CFIN 302 Investment Analysis 30 hrs.

This course focuses on the description and analysis of the sources of investment information, various investment vehicles, operations of security markets, trading environment, security valuation models, investment objectives, and modern techniques of investing in securities. Prerequisite: CFIN 101.

CFIN 303 Commercial Banking 30 hrs.

This course is an introduction to banking regulations, evolution of banking activities, description of banking accounts and lending practices, functions and operations of commercial banks, credit analysis, liquidity management, assets and liability management, profitability and adequacy measures. Prerequisite: CFIN 101.

CHMN 201 Principles and Standards of Humanitarianism 30 hrs.

This course gives an overview of the main principles of humanitarian action. In this course you will learn about the most important principles of aid work, participation, doing no harm, and accountability. Participants will be exposed to realistic scenarios and apply the principles to challenges they will face while assisting disaster-affected communities.

CHMN 202 Safety, Security and Staff Care 30 hrs.

This course introduces concepts, principles and explores the safety, security and staff care measures necessary for humanitarian workers to effectively perform their roles in insecure and unsafe environments.

CHMN 203 Humanitarian Programming 30 hrs.

This course builds knowledge for any learner who is proactive about developing the core competencies of disaster readiness and survival planning. In addition, it offers essential preparation for a variety of emergency situations and inconveniences that might be encountered. Participants will also be introduced to the disaster cycle, specifically the mitigation and recovery phases, and will create an extensive personal preparedness plan for survival in the absence of common amenities, such as food and water, shelter, and communication.

CHMN 204 Humanitarian Leadership and Operations 30 hrs.

This course builds knowledge of humanitarian practices, fundamental principles and aspects of delivering aid and promoting human welfare in the context of humanitarian relief and development.

CHRM 101 Overview of Human Resource Management 30 hrs.

This course introduces the main concepts of managing human resources in organizations, discusses the various roles that HRM departments play and demonstrates how HR policies and practices help support the business strategy. Topics include the strategic role of HRM, job analysis and personnel planning, recruitment and selection, training and development, performance management, compensation and retention as well as the ethical aspect of HRM.

CHRM 201 Workforce Planning and Staffing 30 hrs.

This course explores how organizations plan for changes in their workforce, create recruitment strategies, and develop selection systems to identify the best talent for their businesses. It encompasses planning for, establishing, and maintaining a quality work force; identifying critical specifications for filling positions; recruiting a pool of talent; developing methods for selecting from the talent pool; and creating desirable person/job and organization fit.

CHRM 202 Total Compensation and Benefits 30 hrs.

This course conveys applied knowledge about compensation systems for aspiring HR professionals. The course objective is to provide a solid understanding of the art of compensation practice and its role in promoting companies' competitive advantages. It is assumed that students will be best prepared to assume the role of competent compensation strategist if they possess a solid understanding of compensation practices. Thus, we will examine the context of compensation practice, the criteria used to compensate employees, compensation system design issues, employee benefits, and contemporary challenges that compensation professionals will face well into the 21st century.

CHRM 203 Employee Training and Development 30 hrs.

Rapid changes in technology and job design, along with the increasing importance of learning- and knowledge-based organizations make training and development an increasingly important topic in human resources development. In this course, the student will learn how to identify training and development needs through needs assessments, analyze jobs and tasks to determine training and development objectives, create appropriate training objectives, design effective training and development programs using different techniques or methods, implement a variety of different training and development activities, and evaluate training and development programs.

CHRM 301 Managing Human Behavior in Organizations 30 hrs.

This course introduces students to many of the basic principles of human behavior that effective managers use when managing individuals and groups in organizations. These include theories relating to individual differences in abilities and attitudes, attribution, motivation, group dynamics, power and politics, leadership, conflict resolution, organizational culture, and organizational structure and design.

CHRM 302 Managing the Employment Relationship: HRM, Society and the Law 30 hrs.

The purpose of this course is to increase student's knowledge of legislation and practices related to employment and labor law in the work environment and to provide an introduction to the basic elements of the relationship between employers and their employees. This course provides an overview of legal issues affecting human resources management. It focuses on the impact of law on individuals in organizations, recognition of legal problems, and the legal impact of human resources decisions. It also integrates employment and labor laws with social and economic forces shaping the current diverse management-labor environment.

CHRM 401 Strategic Management 30 hrs.

This course highlights the systematic approach that companies use to plan, develop, execute and evaluate the functional decisions that will enable them to achieve their long-term goals. It focuses on the process of delimiting the company's mission, vision, strategies and corporate goals as well as developing the internal plans, policies and procedures to successfully accomplish all projects and programs. Throughout this course, students will learn how to understand the competitors'

positioning, set clear goals and review the business strategies in order to better cope with various changing factors (i.e. political, economic, social, technological, environmental and legal) which may directly and indirectly impact the company's overall performance and business operations. The course will also address the SWOT concept and how to align all divisional/departmental/unit goals to a well-defined business mission and vision, and tackle McKinsey 7S model and how to strategically manage the company's overall assets and business operations including monitoring of business results, benchmarking, evaluating the efficacy and efficiency of the processes, controlling factors and dealing with change.

CHRM 402 Advanced Topics in Human Capital Management 30 hrs.

This course is designed to give the student insights into contemporary and future HRM issues. It addresses leading-edge human resource management theories and practices in terms of their ability to have a positive impact on organizational results and encourage desired employee attitudes and behaviors. This course will help the student understand the diverse aspects of HRM, while providing knowledge of the tools and techniques of the modern Human Resource Manager. Main topics cover the importance of managing intangible assets, knowledge management and learning organizations, flexibility, empowerment and ethics.

CINR 101 Basic Skills for Interior Design 42 hrs.

This course teaches the student to develop skills and techniques in order to visualize interior design ideas; develop critical thinking and creativity in relation to space, with the ability to draw sketches and learn survey of sites; and read existing structures, scaled plans, elevations and sections with a hint of presentations, renderings and knowledge of volume and proportions. Students explore the fundamentals of interior construction.

CINR 102 Elements and History of Design Styles 42 hrs.

This course introduces the elements that affect the interior spaces, focusing on color and its implications, fundamentals of lighting design and major finish materials. Students will explore furniture styles from renaissance till modern era, with special consideration given to the cultural, social, and political contexts in which they were designed and used. Site visits to galleries, art spaces and showrooms will be organized. Prerequisite: CINR 101.

CINR 103 Drawing and Rendering for Interior Spaces 42 hrs.

This course concentrates on hand drawing and introduces rendering materials, methods, techniques, shades and shadows. Students will use mixed media to learn color theory. They will also learn the mechanical skills needed to visually communicate spatial concepts and develop floor plans into three-dimensional interiors by exploring the principles of isometric views and one point perspective drawing.

CINR 201 AutoCAD for Interior Designers 42 hrs.

Using a combination of lecture, demonstration and hands-on exercises, this course will introduce the basic tools necessary to translate drafting skills into a digital format. It will focus on the concepts and the use of key commands of AutoCAD, the leading drafting software for the construction and design industry, required to draw and print 2D engineering drawings. Prerequisite: CINR 101.

CINR 202 Practice of Interior Design 42 hrs.

The course will enhance students' problem-solving capabilities, technical drawing and analytical skills. Students will develop a professional and creative approach to design by presenting a complete residential project. Prerequisites: CINR 102 and CINR 201.

CINR 203 Technical Detailing and Execution Drawing 42 hrs.

The course concentrates on presentation techniques, survey, construction and detailing. Taking a specific area of the residential project (bathroom, kitchen), students will explore and learn construction methods, appropriate use of materials and how to detail joints and junctions. The studio project work is supported by a series of lectures on materials with visits to showrooms and suppliers to develop awareness of current ranges, materials and finishes. Prerequisites: CINR 102 and CINR 201.

CINR 301 Advanced Interior Architecture Project 42 hrs.

This course deals with large scale projects, public and commercial. Students will be involved in researching the influence of human factors and design standards to analyze existing spaces and propose creative design solutions that will satisfy the new project requirements. Prerequisites: CINR 202 and CINR 203.

CINR 302 Supervised Research Project 42hrs.

This course develops the research skills of the student in undertaking a supervised project from concept to readiness for execution. Emphasis is on methodology, structuring of ideas and final presentation of a complete rendered project. Prerequisite: CINR 301.

CJRN 201 Media Law and Ethics 30 hrs.

This course addresses media ethics as globally understood and standardized. It engages with the most common ethical dilemmas that journalists and other media practitioners face in their career, in theory and practice. In addition, the course examines the basic legal guidelines that govern the media industry and the variations in these guidelines across different countries. The course aims to delineate the interrelation between ethics and law in the digital age. It addresses issues pertaining to freedom of expression, defamation, copyright violations, invasion of privacy, and violent media representations. The course also explores the social responsibilities of journalists and editors on multimedia platforms.

CJRN 202 Investigative Journalism 30 hrs.

This course focuses on the principles, skills and tools required to complete investigative reports. Participants review examples of investigative pieces, learn the history of investigative reporting and its role in society, study various investigative techniques, and develop familiarity with online and offline sources. By the end of the course, participants will get a solid overview of fact-checking and learn about the various ways of telling/writing stories. The course is largely hands-on, with multiple investigative exercises included.

CJRN 203 Mobile Reporting 30 hrs.

This course aims to familiarize participants with the means of producing journalistic stories on mobile devices. It focuses on flexible, fast and cost-effective methods of generating media content and preparing it for publication. The intensive course is divided into two workshops, each extending over 3-4 days and separated by 2 weeks. The course is meant to highlight the possibilities presented by mobile reporting, the most important user-friendly platforms, programs and applications, in addition to the basics of shooting and editing videos using smartphones.

CJRN 204 Multimedia Journalism 30 hrs.

This course explores the emerging opportunities and challenges in the current digital age in terms

of generating data, crosschecking, networking with sources, creating and arranging audiovisual material, and expanding outreach. The course highlights the differences between reporting to TV, radio, and online outlets. It also examines the challenges of adapting to new media technologies and of diversifying the forms of engagement depending on the context and the target audience. Moreover, it highlights the distinction between digital storytelling and other forms of reporting.

CLCE 110 Daily Living Skills I 48 hrs

Students are introduced to the program learning how to give the right information about themselves and their families. They will later focus on selecting and managing a household and consider space, location, and budget while searching for a house. They will be able to identify types of houses and the advantages and the disadvantages of these different types of houses. They will also learn the difference between renting and buying a house and decide what exactly they need. Later in the semester, students will identify the basic furniture, tools and appliances needed for a specific house by sorting out what is essential and what is luxurious. They will also learn the basic cleaning and maintenance activities one needs for a house.

CLCE 111 Daily Living Skills II 48 hrs

In this course, Students will learn about caring for personal needs. They will be able to obtain, interpret, and understand health information. Students will also gain knowledge of common illness, prevention and treatment by general understanding of medical problems, medicine and their use. Students will also learn about the importance of hygiene and how cleanliness is very related to health. Later in the semester, they will build on their knowledge about the importance of dressing up appropriately according to a certain occasion and a specific place the students are going to. By the end of the semester, they will be able to know how to take care of their personal needs as well as obtaining health measures like healthy diet, exercise and stress reduction.

CLCE 112 Self Determination and Interpersonal Skills I 48 hrs

This course helps the students to work on their social and emotional well-being. In this course, the students learn about personal traits and identify personal needs. They identify personal roles and the responsibilities that each role has. The students also learn and demonstrate listening and responding skills as well as the different social behaviors needed in different situations in a society.

CLCE 113 Self Determination and Interpersonal Skills II 48 hrs

This course is a continuation of CLCE 112. It will focus on teaching additional everyday expressions, phrases, and terms that are typically used in business, social, and community settings. Emphasis will be placed on making good decisions, with regards to a variety of personal and social topics, as well as learning more about oneself and the world in which we live. Social, emotional, self-regulation, executive function, and adaptive skills will continue to be embedded in the curriculum/lessons, which will continue to be taught in lecture/small group/whole group formats, and which will include many hands-on and out of class activities.

CLCE 114 Functional Math I 48 hrs

This course focuses on teaching basic math skills that are needed for everyday life. The course covers basic counting and computation skills (in both English and Arabic), reading and writing numbers up to million, ordering & comparing numbers, as well as problem solving. It focuses on practical use such as in calculators, basic measurement, capacity, weight, temperature, shapes and patterns.

CLCE 115 Functional Math II 48 hrs

This course will elaborate on the skills learned in Functional Math I. It will focus on the concepts related to operations as well as problem solving. It will also focus on the practical use of numbers, as well as measurement of distances, weight, volume, temperature and time. Money operations related to handling money when making a purchase, knowing how much to pay, and how much to expect in change, when paying with cash or a credit or debit card.

CLCE 116 Computer Skills I 48 hrs

This course focuses on teaching basic computer skills needed to log in, send emails and attachments, and save files. The course also covers all the techniques needed to participate in online learning.

CLCE 117 Computer Skills II 48 hrs

Students will continue to develop important computer literacy skills that will allow them to navigate the web, conduct successful web searches, and send email messages.

CLCE 118 Employment Skills I 48 hrs

Students in this employment course will know and explore occupational possibilities. They will identify personal and social values met at work. Furthermore, students will learn to follow directions and observe regulations.

CLCE 119 Employment Skills II 48 hrs

During this employment course, students will classify jobs into categories and investigate local employment and training opportunities. They will learn the importance of punctuality and attendance at work.

CLCE 200 Daily Living Skills III 48 hrs

In this course, students will work on understanding relationship roles and changes with friends and others. They will also gain knowledge about reasons for establishing relationships and will learn more about joint responsibilities between family, friends and colleagues and work.

CLCE 201 Daily Living Skills IV 48 hrs

In this course, students will learn about buying, preparing, and consuming food. They will be able to plan a balanced diet. Moreover, students will learn how to store food and how to clean food preparing areas properly. This way, they will be identifying and demonstrating all the proper cleaning procedures needed in the kitchen. Later in the semester, students will learn about proper ways of dealing with cloths such as cleaning, ironing, mending, and storing cloths.

CLCE 202 Self Determination & Interpersonal Skills III 48 hrs

In this course, the students will explore their social and emotional preferences and understand the difference between personal needs and personal preferences. They will identify the communication skills necessary to become self-determined and learn to voice their personal needs. The students will explore the aspects of making and maintaining friendships and the rights and responsibilities that each individual in a friendship holds. They will learn to identify, demonstrate, and respond to praise. The course finishes by recognizing authority figures and learning how to follow written and verbal instructions.

CLCE 203 Self Determination & Interpersonal Skills IV 48 hrs

During this term, they will learn to identify and demonstrate ways that goal setting and attainment affect one's life, identify potential goals and outcomes and determine plan of action. They will identify and describe areas of self-motivation and its effects on attaining present and future goals. They will complete the course by recognizing nonverbal means of communication as well as verbal expressions that are consistent with their feelings. Later in the semester, students will learn about how to be a good problem solver by being able to identify through a certain situation, the problem, the cause, the consequences and the solution. They will also be able to critically think what could have been done to avoid this specific problem.

CLCE 206 Computer and Expressive Arts III 48 hrs

Students will learn basic computer skills that are needed for everyday functioning. These skills will include learning how to send email messages and navigate the World Wide Web. Basic Microsoft Word will also be introduced. During Art Therapy Class, students will learn how to express themselves through various forms of art. Embedded in the Dance and Body Movement Class are activities that involve social, emotional, self-regulation, executive function and adaptive skills.

CLCE 207 Computer and Expressive Arts IV 48 hrs

Students will practice their typing skills and learn to insert a relevant picture to the typed text. In Art class, students will work on their art work and prepare what is needed to be exposed for the art exhibition at the end of the semester.

CLCE 208 Functional Math III 48 hrs

This course will teach the students how to make responsible expenditures by identifying prices on labels and tags of merchandise and choosing the most economical buy among like items of a similar quality. Students will also learn to identify purchases as necessities or luxuries in the areas of food, clothing, housing, and transportation. Students will visit different sale points and compare prices to determine the amount of money saved by buying sale items.

CLCE 209 Functional Math IV 48 hrs

In this course, the students will learn to develop basic financial records. They will learn to construct a monthly personal budget for a specific income, identify financial information and financial records that should be retained.

CLCE 210 Employment Skills III 48 hrs

In this course, students will have to identify personal and societal values met through work. They will also learn about the remunerative aspects of work. Students will learn to explore occupational possibilities by locating sources of employment and training information, classifying jobs into employment categories, and investigating different employment opportunities. Students will explore jobs and different career paths through field trips and on-site training.

CLCE 211 Employment Skills IV 48 hrs

In this course, students will learn to investigate and identify major employment interests as well as employment aptitudes. They will also investigate employment choices and identify the requirements needed for a desired available employment job. Students will learn to identify the needs that can be met through one's occupation and rank them in order of personal preference.

CLCE 300 Daily Living Skills V 48 hrs

In this course, students will learn about the importance of safety in the community. They will be able to identify the proper safety rules they should follow at home, work, and in the community as a whole. Furthermore, they will learn how to respond to emergency situations. They will also learn how to secure one's home when at home and away from home using the proper safety practices.

CLCE 301 Daily Living Skills VI 48 hrs

In this course, students will learn what is abuse and harassment. They will also be exposed to several situations from which they will learn about the different types of abuse and harassment. Students will learn how to deal with each situation and when and how to ask for help. Furthermore, they will learn about the importance of reporting a certain incident which they have been exposed to.

CLCE 302 Self Determination & Interpersonal Skills V 48 hrs

Students will demonstrate awareness of how their behavior affects others and how others perceive them. They will learn how to read nonverbal cues and learn to communicate assertively and effectively in different situations. They will also learn how to respond to emergencies. They will learn to examine the emergency and the steps in first-aid process. They will learn which authority to contact in a given emergency.

CLCE 303 Self Determination & Interpersonal Skills VI 48 hrs

In this course, students will learn to develop and demonstrate appropriate behaviors and anticipate the consequences of choices and behaviors they make. They will revise the aspects of setting goals. They will develop and plan goals and try to attain them. They will learn to self-evaluate and provide feedback by developing and evaluating alternative options. They will understand the motivation of others in the decision-making process. They will learn how to establish and maintain close relationships. They will identify whom they can establish close relationships with and learn about the roles and responsibilities of the individuals in the relationship.

CLCE 306 Computer and Expressive Arts V 48 hrs

Students will learn computer skills that are needed for everyday functioning. These skills will include learning how to send email messages and navigate the World Wide Web. Basic Microsoft Word will also be introduced. Also, students will learn how to express themselves through various forms of Art and Dance movements.

CLCE 307 Computer and Expressive Arts VI 48 hrs

During computer class, students will learn how to research, copy paste information, save images, and create PowerPoint presentations. In expressive arts classes, students will learn how to express themselves through various forms of art and dance movement. This will include painting, drawing, role-playing, and participating in showing movements that reflect their emotions. Embedded in the activities are social, emotional, self-regulation, executive function and adaptive skills that are needed to function well in society. In dance classes, students will be trained on specific dance moves to be presented a show at the end of the semester.

CLCE 308 Functional Math V 48 hrs

In this course, students will continue to learn to develop basic financial records. They will learn to apply what they have learned in the previous course. They should be able to record personal major income and expenses for one month. They will also learn to calculate balances of major debts.

CLCE 309 Functional Math VI 48 hrs

Students will develop an understanding of place value and will be able to count by 5's 10's and 2's. They will also be learning how to sort and group items. Moreover, they will be able to compare numbers from smaller to greater and vice versa. Furthermore, students will be focusing on addition and subtraction problem solving by underlining the given, the required, and the keywords in a problem that help them decide whether it's an addition or subtraction math problem. By the end of the term, they will be able to read a bill and decide if the money they have is enough or not to pay the bill and how much less or more they have in relation to the number on the bill.

CLCE 310 Employment Skills V 48 hrs

In Employment classes, students will identify personal and societal values met through work. They will also learn how to exhibit the appropriate employment skills needed to be a successful and productive employee. Through internships at workplace experiences, students will be able to learn how important it's to follow directions, observe regulations, and be punctual to work. They will investigate the local employment and training opportunities and start to know more about them through their internship hours.

CLCE 311 Employment Skills VI 48 hrs

During employment, students will also learn how to exhibit appropriate employment skills while working with others. They will learn how to develop appropriate employment skills such as being punctual, following directions, dressing properly, respecting peers at work and applying the proper hygiene. Through internships at workplaces students will be practicing all what they learn in class and will be able to investigate choices and identify the desired and available employment.

CLDS 100 Introduction to Leadership Skills 30 hrs.

This course provides the participants with the basic knowledge and skills needed for a successful leader and helps them understand their role in developing their leadership skills as well as the skills of their colleagues. The main topics include characteristic of a successful leader, setting objectives, communication and listening skills, teamwork and group dynamics, and the importance of planning, evaluating and follow up.

CLDS 202 Emotional Intelligence in Leadership and Management 30 hrs.

The main objectives of this course are to help the participants assess their current leadership skills, analyze their strengths and weaknesses, and understand the role of emotional intelligence in leadership and management. The main topics include SWOT analysis, brain science and emotional intelligence, basic foundations of emotional intelligence, positive and negative emotions, and the importance of emotional intelligence in planning for development and change.

CLDS 203 Understanding Oneself Understanding Others 30 hrs.

The main objectives of this course are to introduce the participants to emotional and behavioral styles and help them discover their strengths and weakness based on their behavioral style. The main topics include understanding oneself, understanding and accepting others, understanding stress and time control problems, planning for stress and time management, and the importance of emotional intelligence and mindfulness in understanding self and others.

CLDS 204 Leading Oneself Leading Others 30 hrs.

The main objectives of this course are to introduce participants to the essential skills needed for

a successful leader in leading themselves and leading others and assist them in creating plans to develop their skills in leading themselves and in leading others. Main topics include: emotional Intelligence, mindfulness, strategic planning, problem solving, conflict management, change management, counseling, empowerment, delegation, and the role of the leader in training others.

CLDS 205 Training of Trainers on Elementary Leadership Skills 30 hrs.

The main objectives of this course are to introduce participants to the essential skills needed for a successful Trainer, and to help them plan, implement and evaluate one training course on Elementary Leadership Skills. Main topics include characteristics of a successful training program, research methods for training needs assessment, structure of a training program, managing training problems, Characteristics of a successful trainer, and importance of leadership training in development.

CMAD 200 Developing Hybrid Mobile Apps with PhoneGap 30 hrs.

This course is designed to get students started with PhoneGap by teaching them the basics of creating a PhoneGap application. In this course, students will develop a PhoneGap application using the Windows Phone 7 tools and JQuery Mobile. You will also learn how to use some of the PhoneGap native APIs to access the native libraries of various mobile platforms. Finally, students will learn how to use PhoneGap Build to build an application for iOS, Android and more! Prerequisites: Developing Single Page Applications with AngularJS.

CMAD 201 Developing Android Apps 30 hrs.

This course is designed to get students started with Android development. During the course, students will define, design and scope Android apps for mobiles and tablets. Students will draw and analyze story boards and refine the user experience. The course will allow students to develop Android apps of simple to medium complexity with the ability to connect to the cloud. Prerequisites: Developing Windows Azure and Web Services OR Developing ASP.NET MVC Web Applications OR Developing PHP Web Applications OR Developing Node.js Applications.

CMAD 202 Developing iOS Apps 30 hrs.

This course is designed to get students started with iOS development. During the course, students will define, design and scope iOS apps for mobiles and tablets. Students will draw and analyze story boards and refine the user experience. The course will allow students to develop iOS apps of simple to medium complexity with the ability to connect to the cloud. Prerequisites: Developing Windows Azure and Web Services OR Developing ASP.NET MVC Web Applications OR Developing PHP Web Applications OR Developing Node.js Applications.

CMAD 203 Developing Windows Phone Apps 30 hrs.

This course is designed to get students started with Windows Phone apps development. During the course, students will define, design and scope WP apps for mobiles and tablets. Students will draw and analyze story boards and refine the user experience. The course will allow students to develop WP apps of simple to medium complexity with the ability to connect to the cloud. Prerequisites: Developing Windows Azure and Web Services OR Developing ASP.NET MVC Web Applications OR Developing PHP Web Applications OR Developing Node.js Applications.

CMGT 101 Principles of Management 30 hrs.

This course focuses on the functions of management: planning, organizing, staffing, directing, and control.

CMKT 101 Principles of Marketing 30 hrs.

This course is an overview of the scope of the marketing function and the environment affecting marketing managers. Topics covered include the marketing environment and planning and developing of the marketing mix.

CMKT 202 Marketing Research 30 hrs.

This course covers the entire research process: problem definition, data collection methods, sample design, collection of data, tabulation and analysis, and presentation of results.

CMKT 301 Marketing Communications and Advertising 30 hrs.

This course is an overview of promotion management and integrated marketing communications. Topics covered include behavioral foundations of marketing communications, environmental influences on marketing communications, and the promotion management process and its execution.

CMKT 302 Sales Management 30 hrs.

This course focuses on the activities of first-line field sales managers. It covers sales management functions and strategies, developing the selling function, sales goals and structure, building a sales program, and leading and motivating the sales force.

CMKT 401 Services Marketing 30 hrs.

This course is an overview of the process of marketing services. It includes a study of the characteristics of services and their marketing implications, developing marketing strategies, creating value, pricing, and promoting the service performance, and ensuring a positive customer experience.

CMKT 402 Public Relations 30 hrs.

This course focuses on the communication between an individual or organization and the public to promote stakeholder acceptance and approval. Students explore traditional and emerging components of the public relations process through mass media as well as the needs of different types of businesses, such as corporations, non-profit organizations, and governmental offices.

CMKT 403 Consumer Behavior 30 hrs.

This course focuses on the customer as the key to market success. Topics covered include the roles of a customer, market values a customer seeks, determinants of customer behavior, the customer's mind-set, customer decision-making, and customer-focused marketing.

CMKT 404 International Marketing 30 hrs.

This course is an overview of the scope and challenge of international marketing. Topics covered include the cultural environment of global markets, assessing global market opportunities, and developing and implementing global marketing strategies.

CMUS 103 V Theory and Practice of Voice I 30 hrs.

This course introduces students to western voice technique and its application to the near eastern singing, vocalizing on the Equal Tempered scale and Oriental maqams, starting with the maqams: Nahawand, Ajam, and Kurd and learning repertoire from the vocal music heritage of Egypt and the Mashriq based on those maqams, focusing also on the clear Arabic articulation.

CMUS 104 V Theory and Practice of Voice II 30 hrs.

A continuation of CMUS 103 V, this course focuses on the theory and voice technique of Oriental maqams based on Hijaz: Hijaz, Zanjaran, and Hijaz Kar, Shadd Araban and Shahnaz. The course uses repertoire from the vocal music heritage of Egypt and the Mashriq.

CMUS 106 I Oriental Music Instrument: Theory and Practice I 30 hrs.

This course is the first in the series of courses intended to train students to practice an instrument for Oriental Music. It focuses on the technical foundations of playing that instrument and introduces the main Oriental maqams, exercising on each maqam and getting acquainted with the different forms of instrumental music compositions, such as Wasla and Doulab.

CMUS 107 I Oriental Music Instrument: Theory and Practice II 30 hrs.

This course is a continuation of CMUS 106 I. The course focuses on exercising maqams based on Hijaz: Hijaz, Zanjaran, and Hijaz Kar, Shadd Araban and Shahnaz. Students are introduced to two more forms of Oriental vocal compositions such as: Muwashah and Qad and the instrumental music composition the Maqtou'a Mousiqiyya.

CMUS 201 V Voice for Oriental Singing: Theory and Practice I 30 hrs.

This course focuses on the voice techniques and the vocalizing of quarter tones and the maqams: Rast and the maqams derived from Rast, like: Suznak and Nairuz. The course uses repertoire from the vocal music heritage of Egypt and the Mashriq.

CMUS 202 V Voice for Oriental Singing: Theory and Practice II 30 hrs.

This course focuses on voice technique using quarter tones and on the following maqams: Bayati, Siga, Raht el Arwah and Siga Baladi. The course uses repertoire from the vocal music heritage of Egypt and the Mashriq.

CMUS 203 I Oriental Music Instrument: Theory and Practice III 30 hrs.

This course is a continuation of CMUS 107 I. It focuses on exercising on maqams based on Kurd, Rast and the derived maqams from Rast, like: Suznak and Nairuz. Students are introduced to two more forms of Oriental music compositions: Samai, Bashraf & Taqsim.

CMUS 204 I Oriental Music Instrument: Theory and Practice IV 30 hrs.

This course is a continuation of CMUS 203 I. It focuses here on exercising Bayati, Siga, Raht el Arwah and Siga Baladi and again learning repertoire from the vocal music heritage of Egypt and the Mashriq. In this course, students are introduced to different forms: Tahmila, Longa & Taqsim.

CMUS 300 I Oriental Orchestral Performing 30hrs

This course represents the transitional phase that leads the musicians from the individual play to learning the principles of collective musical performance involving a variety of melodic and percussive instruments. Its aim is to prepare students for comprehensive orchestral teamwork

development by learning synchronization techniques and harmony with all other musicians in the ensemble. Throughout the course, students will acquire further interpretation methodology. The curriculum includes selected easy musical pieces from the Lebanese and Arab folkloric cultural heritage, taking into consideration both rhythmic and aspects of Modes (Maqamat).

CMUS 301 V Voice for Oriental Music: Theory and Practice III 30 hrs.

In this course, students are introduced to two music forms: The Muwashah and the Qad and sing the ensemble set repertoire with all students.

CMUS 302 V Voice for Oriental Music: Theory and Practice IV 30 hrs.

This course is a continuation of CMUS 301 V. In this course, students are introduced to two music forms: The Mawwal and the Taqtouqa going through all studied maqams and sing the ensemble set repertoire for a final year concert that includes a solo performance, and learn the basics of stage etiquette.

CMUS 303 I Oriental Music Instrument: Theory and Practice V 30 hrs.

In this course, students are introduced to two music forms: The Qasida and the Dawr and sing the ensemble set repertoire with all students.

CMUS 304 I Oriental Music Instrument: Theory and Practice VI 30 hrs.

In this course, students focus on the ensemble set repertoire for a final year concert that includes a solo performance, and learn the basics of stage etiquette.

CMUS 305 Oriental Music Ensemble Practice I 30 hrs.

In this course, performers from all different instruments meet for an ensemble rehearsal preparing for a certain repertoire under the supervision of a conductor. The repertoire includes instrumental pieces and vocal pieces. Ensemble practice includes all-group rehearsals or a duet or a trio or a quartet rehearsal with or without a singer.

CMUS 306 Oriental Music Ensemble Practice II 30 hrs.

This course is a continuation of Music Ensemble Practice I. The program is set in the beginning of the semester towards a concert.

CNRS 201 Leading Quality Initiatives at the Bedside 30 hrs.

This course prepares direct-care nurses to be involved in quality initiatives and take the lead in transforming care at the bedside.

CNRS 301 Foundations of Leadership and Management in Nursing 30 hrs.

This course focuses on the requisites and foundations of successful and effective leadership and management. The topics that will be discussed include problem solving, decision-making, critical thinking, communication, ethical issues, and emotional intelligence.

CNRS 302 Leading Towards Effective Patient Care Management 30 hrs.

This course focuses on various leadership skills. Organizational structure, strategic and operational planning, time management, staffing, conflict management, delegation, and performance appraisal will be discussed.

CNRS 303 Managing Quality Improvement 30 hrs.

In this course, students will be provided with the basic concepts and tools necessary to manage quality improvement. Topics include quality management and utilization, accreditation and risk management, patients relations and patients satisfaction as quality indicator, development of policies and procedures, human resource management, and evidence based nursing management.

CNRS 304 Advanced Management Practice 30 hrs.

This is an advanced short course that concentrates on the following major areas: development of policies and procedures, human resource management, and evidence-based nursing management.

CNRS 305 Practicum 60 hrs.

The practicum is divided into clinical rotation with hands on or observation depending on whether the participants are Lebanese or not. Other rotations would be to Human Resources department, patient relation department, quality, and risk management office, and nursing office for observation. This course includes a project writing related to improvement initiative or clinical problem.

CNRS 306 Data, Information and Knowledge 30 hrs.

This course focuses on the nature of data, the concepts of information and knowledge, principles of relational database systems, operations, information systems, data sets, data standards and classification systems. During the course, students will be able to gain knowledge about developing a database.

CNRS 307 Informatics and the Health Care Delivery System 45 hrs.

This course is designed to introduce students to the field of health care informatics. It focuses on the history of health care informatics, basic informatics concepts and health information management applications. During the course, students will discuss and compare information management applications related to administration, education, practice, and research.

CNRS 308 System Lifecycle 45 hrs.

This course focuses on a structured approach to the selection and implementation of an information system. The course includes four sections corresponding to the five phases of the life cycle: planning, analysis, design, implementation, and evaluation.

CNRS 309 Issues in Health Care Informatics 30 hrs.

This course is designed to encourage students to engage in a dialogue among themselves and with experts in the field of health care and health care informatics in order to come to some understanding of current issues. Using a single broad case study, students view the issues engendered by the case through the many-colored lenses of ethics, politics, society, and law.

CNRS 310 Data Standards, Terminologies and Implications for Practice 30 hrs.

This course focuses on Knowledge Representation: data standards, terminologies, and their implications for practice. The terminologies component provides an overview for nursing and

other health care terminologies in use. The data component describes the functions of data standards and implications for informatics as well as professional practices.

CNRS 311 Introduction to Community Health Nursing 45 hrs.

This course is designed to introduce students to theories of nursing and principles underlying current community health nursing practice, public health, and primary health care. The focus of care is on clients who may be represented as individuals, families, and small groups or larger aggregates and community.

CNRS 312 Practicum I: Application of Theories and Concepts 90 hrs.

The practicum course provides students with field practice experiences through collaboration with other health professionals in primary health care settings, clients' homes and schools. The focus of interventions is health promotion, health maintenance, and the prevention of illness and disability.

CNRS 313 Advanced Concepts and Issues Relevant to Community/ Public Health Nursing 45 hrs.

This course addresses advanced concepts and issues relevant to community/public health nursing. Students are provided with advanced knowledge and skills in population, family and individual needs assessment. Areas of focus include health promotion, health education, and management of chronic diseases.

CNRS 314 Practicum II: Planning and Evaluation of Community Based Interventions 90 hrs.

This course provides field experiences designed to enhance collaborating with interdisciplinary team members in planning, organizing, delivering, and evaluating population-focused programs to achieve health goals, including health promotion and disease prevention activities.

CNRS 315 Fundamental of Critical Care Nursing 30 hrs.

This course gives an overview of critical care nursing: critical care environment, relationship with patient and family, end-of-life care, infection control and safety, communication and documentation. It also focuses on dysrhythmia interpretation, ECG interpretation, hemodynamic monitoring, and ventilatory assistance.

CNR 316 Nursing Care Management of the Critically Ill Adult 30 hrs.

This course aims at enhancing the participants' know-how in cases of shock, cardiac alterations, nervous system alterations, acute respiratory failure, and acute renal failure.

CNRS 317 Nursing Management of Acute Medical and Surgical Emergencies 30 hrs.

This course aims at enhancing the participants' know how in cases of hematological and immune disorders, gastrointestinal alterations, endocrine alterations, trauma, and burns.

CNRS 318 Practicum I: Critical Care Nursing: Assessment and Evaluation 60 hrs.

This course provides field experiences designed to enhance collaborating with interdisciplinary team members in assessing and evaluating population-focused programs to achieve health goals, including health promotion and disease prevention activities.

CNRS 319 Practicum II: Critical Care Nursing: Management 100 hrs.

This course provides field experiences designed to enhance collaborating with interdisciplinary team members in managing population-focused programs to achieve health goals, including health promotion and disease prevention activities.

CNRS 320 Practicum III: Code Management 30 hrs.

This course provides field experiences designed to enhance collaborating with interdisciplinary team members in code management.

CPHM 200 Team Leading 42 hrs.

Team Leading.

CPRM 102 Emotional Intelligence and Project Leadership 30 hrs.

This interactive course is designed to provide a solid foundation in key leadership competencies and to afford students the opportunity for a truly transformational leadership experience. Students will complete a self-assessment of their project leadership skills, then master the basics of essential leadership competencies such as setting direction, aligning people, motivating and inspiring, leading teams, communicating, building relationships, facilitating ethical conduct, negotiating and leading change. Students will also gain a clear understanding of why communication is so important regardless of how a project is organized then discover how business and personal ethics can influence not only their leadership style but also the final course a project will take.

CPRM 103 Project Schedule Management 30 hrs.

Delivering a project within the promised time frame & scope and allocated budget is primordial for organizational success. Whether students are delivering a high-rise building, a new piece of software, a power plant, or a nuclear submarine, all projects require constant monitoring and controlling to meet their objectives on time and within budget. This course applies a variety of techniques to balance the competing demands of scope, schedule, and cost. It uses project management best practices to apply the latest scheduling tools and techniques. Students will learn how to establish the performance measurement baseline (PMB) and gain proficiency in modern tools and proven techniques used to compare actual work accomplished against established plans. In addition, they will learn how to plan project scope based on stakeholder budget and schedule constraints.

CPRM 104 Project Stakeholder Engagement and Management 30 hrs.

This course allows students to create healthy partnerships with their stakeholders and build a win-win environment for their business. In this course, they will learn how to manage their stakeholders efficiently with savvy communication strategies that increase engagement during project execution. Students will learn how to analyze stakeholders, map power structures, keep open lines of communication, and use interpersonal skills to connect. This course highlights the importance of stakeholder engagement, collaboration, and communication during project planning and development. It discusses the role of stakeholders and how the project leader must encourage active involvement to ensure the team has a clear understanding of the project requirements and stakeholder expectations. Also addressed are common tools used for knowledge sharing throughout the course of the project, which is essential to deliver value and keep everyone informed on the status of the project.

CPRM 202 Project Leadership and Communication 30 hrs.

This course will help project managers become better team leaders by sharpening their skills and improving their knowledge in key areas of communication, motivation, expectation setting and problem solving. Participants will be equipped with practical knowledge, skills, and tools that empower them to effectively lead projects.

CPRM 203 Project Scheduling and Control Tools 30 hrs.

Project Planning and Control is highly important in organizations. This course involves an in-depth coverage of project planning and control tools used in managing and delivering projects. The topics covered in this course are project scheduling basics and models as well as project monitoring and control tools.

CPRM 204 Project Stakeholder Management 30 hrs.

Upon completion of this course, the project manager would have learnt the tactics and tools to properly identify, categorize and prioritize stakeholders, manage stakeholders in a real and virtual world, and have a grasp of the leadership and negotiation skill sets required to manage difficult stakeholders in complex projects.

CPRM 205 Green Project Management and Sustainable Construction 30 hrs.

This course covers principles of sustainable design and construction, including life-cycle assessment, economic and environmental impacts, carbon footprint, and green building rating systems, such as LEED and BREEAM.

CPRM 216 Project Risk Analysis and Mitigation 30 hrs.

Risk is a given in any project, and the better attendees understand how to identify and prepare for it, the more likely they are to minimize their exposure to it. In this course, students will practice a systems approach and explore tools and techniques for identifying, analyzing, planning, and controlling risk. They will use both qualitative and quantitative methods to identify risk and discuss appropriate risk response strategies. They will also learn how to incorporate their risk management analysis into the overall project plan and offer alternatives to their project sponsors and decision makers when contingencies arise, and scheduled completion dates or budget targets are affected.

CPRM 302 Design Project Management 30 hrs.

The course covers the characteristics of the project design phase, design team selection, and design services agreement formation and negotiation. It focuses on value engineering and management, constructability considerations, and project cost management during design.

CPRM 303 Construction Project Management 30 hrs.

The course offers an extended overview of project management in construction. It covers integrated planning-estimating-scheduling concept; project time, budget, and quality baselines; materials management and subcontracting issues; and integrated project cost-time control.

CPRM 304 Construction Contract Administration under the FIDIC Conditions 30 hrs.

The course deals with contract documents, with a focus on specifications structure, procedural requirements, specifying methods, and the basis for unit rate estimation. It covers the Engineer's roles along with contract administration issues. The course provides the participants with an essential understanding of FIDIC contracts and the various elements of the FIDIC 1999 suite of contracts.

CPRM 305 Pre-Project Planning 30 hrs.

This course covers the work done by the owner team in the pre-project phase including preparation of a design brief and making a go/no go decision. Topics include assimilation of client needs; market assessment studies; impacts of laws and regulations on the facility program; surveys of infrastructure conditions; investigation of site conditions; scope validation; project execution planning, project costs and schedule estimation; life-cycle analysis; and financial planning.

CPRM 310 Project Economic Feasibility 30 hrs.

This course will provide the participants with an understanding of the principles involved in analyzing alternatives that arise during the project life cycle based on sound economic and financial principals. It covers the basic concepts, and methodology for making rational decisions in the design and implementation of real engineering and business projects.

CPRM 311 Managerial Risk and Decision Analysis 30 hrs.

This course prepares participants to proficiently describe, analyze and rationally respond to decision situations with uncertain outcomes. The process of developing effective decision-making tools is presented. These tools include spider and tornado diagrams, influence diagrams, decision trees, and Monte Carlo simulation, among others.

CPRM 312 Program Management 30 hrs.

This course presents a view of managing projects from an organizational perspective. The main areas of discussion will be strategic alignment, the role of effectively managing organizational assets through an enterprise project management office, portfolio management, and program management.

CPRM 313 Supply Chain Management 30 hrs.

This course will introduce the participants to supply chain management and its key issues: Procurement practice and contracts, logistics, network configuration, inventory management, distribution strategies and strategic alliances, and value of information in supply chains. Hands-on tools related to demand forecasting and setting optimal stock levels will be presented.

CPRM 316 Project Risk Management 30 hrs.

Successful project management practices must adequately assess risks and execute a successful risk response. This course presents different approaches to identify risks: qualitative and quantitative methods to analyze risks and determine their impacts; risk ranking and response techniques; and approaches to monitor, control, and communicate risks throughout the project life cycle.

CPRM 329 Technology and Innovation Management. 30 hrs.

This course covers Management of technology and innovation at an organizational level and its contribution to organizational success. It also examines engineering, science, and management principles contributing to the development of a successful framework for managing technology within an organization.

CSTC 201 Public Relations 30 hrs.

This course presents a comprehensive conceptual framework of the field and profession of

public relations. Emerging issues, such as technology, ethics, and the international aspects of public relations are considered through examining PR strategies, tactics, and case studies.

CSTC 202 Communication Campaigns 30 hrs.

This course introduces core concepts in social and political communication and their forms of application. The course examines how states, non-state actors, and media outlets produce and promote social and political messages through various marketing and advertising techniques, and how these messages impact the public's priorities and preferences.

CSTC 203 Corporate Identity and Branding 30 hrs.

This course introduces core concepts and practices pertaining to corporate identity, branding, and image management. It examines the impact of image construction and equity building on the recipients' assessment of messages and their communicators. Students will learn how to render their messages more recognizable in a marketplace in order to enhance the public's trust in the products or services they provide.

CSTC 204 Interpersonal Communication 30 hrs.

This course is meant to improve the students' understanding of their interpersonal communication behaviors to enhance their communication skills and capabilities. The course also introduces public speaking and speech writing in addition to adequate forms of engagement with press interviews and media appearances. Students will learn the basic skills for writing speeches and delivering them effectively to different live and online audiences through visuals and slides shows.

CWAD 200 Programming in HTML5 with JavaScript and CSS3 30 hrs.

This course introduces HTML5, CSS3, and JavaScript and helps students gain basic HTML5/CSS3/JavaScript programming skills. This course is an entry point into the Web applications courses.

CWAD 201 Developing Windows Azure and Web Services 30 hrs.

In this course, students will learn how to design and develop services that access local and remote data from various data sources. Students will also learn how to develop and deploy services to hybrid environments, including on-premises servers and Windows Azure.

CWAD 202 Developing ASP.NET MVC Web Applications 30 hrs.

In this course, students will learn how to develop advanced ASP.NET MVC applications using NET Framework 4.5 tools and technologies. The focus will be on coding activities that enhance the performance and scalability of the Web site application. ASP.NET MVC will be introduced and compared with Web Forms so that students know when each should/could be used. Prerequisites: Programming in HTML5 with JavaScript and CSS3.

CWAD 203 Developing PHP Web Applications 30 hrs.

In this course, students will learn the essentials for creating web-based PHP applications. Prerequisites: Programming in HTML5 with JavaScript and CSS3.

CWAD 204 Developing Node.js Applications 30hrs.

This course provides an overview of Node.js, including writing asynchronous code with callbacks

and streams, and modularizing your application with NPM and require. It also looks at built-in API's for building and scaling web applications as well as a few key third party modules. Prerequisites: Programming in HTML5 with JavaScript and CSS3.

CWAD 205 Developing Single Page Applications with AngularJS 30 hrs.

In this course participants will learn how simple it is to use AngularJS to create maintainable and testable single page applications. They will learn how to: bootstrap their AngularJS application; use AngularJS markup and expressions; create and use controllers; use built-in services and create custom services; turn their application into a SPA using routing; and create their own custom elements and handle events using directives. They will also learn how AngularJS allows you to do all things using test-driven-development.

Prerequisites: Programming in HTML5 with JavaScript and CSS3, Developing Windows Azure and Web Services, or Developing ASP.NET MVC Web Applications, or Developing PHP Web Applications, or Developing Node.js Applications.

Special Programs

The SPAAC Summer Program

Program Overview

The American University of Beirut's Continuing Education Center (CEC), in collaboration with the Office of Alumni Relations and the Worldwide Alumni Association of the American University of Beirut (WAAAUB), hosts the SPAAC Summer Program to enhance participants' knowledge of Lebanese culture and expand their understanding of the modern Middle East while experiencing campus life at AUB.

The SPAAC Program is a rich and pleasurable educational experience, and a unique opportunity to enjoy the summer, make new friends, get a taste of college life, and explore Lebanon.

The summer program is open to bright and motivated students from around the world between the ages of 14 and 18. Participants' stay on campus is facilitated and carefully supervised by our highly qualified staff. Participants will be accompanied by staff on all planned activities including on-campus activities and field trips to extraordinary historical sites throughout Lebanon.

Program Structure

Required Courses

Participants will take courses in Arabic language, history, and folk dance. We use a curriculum rich in social and cultural activities. Participants will also get the chance to explore the archaeology of Lebanon through field trips and museum visits. The language of instruction is English. Arabic will be used when appropriate.

All participants will take the following courses:

- **Arabic Language and Culture for Beginners (8 hrs)**

  In this course, students will discover the beauty of the Arabic language and the rich tapestry of Lebanese culture. The course will cover the Arabic alphabet and pronunciation through essential everyday life topics, equipping students with the language necessary for basic communication in various contexts. It will also delve into the cultural nuances of Lebanon, exploring its traditions, customs, and historical landmarks. Through engaging activities such as listening to traditional songs, watching short movies, and participating in cultural discussions, students will gain a deeper understanding of Lebanese culture and its significance in the Arab world.

- **Intermediate Arabic Language and Culture (8 hrs)**

  This course is designed to elevate students' proficiency to an intermediate level while immersing them in the vibrant cultural landscape of Lebanon. Students will engage with everyday life topics essential for effective communication within the Lebanese community. Students will have the opportunity to explore Lebanese culture through the lens of music, cinema, and cultural presentations. By immersing themselves in authentic cultural artifacts, students will deepen their appreciation for Lebanese traditions, values, and societal norms.

- **The Lead Historian: Inventions in the Middle East (8 hrs)**

  This course aims to give participants a historical journey within our region to discover important milestones and past figures. Historical inventions will be discussed from both historical and technical context.

- **Folk Dance (8 hrs)**

  This course introduces participants to Lebanese cultural roots through the Lebanese traditional dance "dabke". The course aims at teaching participants the basic dabke steps, which they will then be able to practice at Lebanese community gatherings and/or during other special occasions.

Elective Courses

Participants may choose to participate in one or two afternoon courses (Drawing, The Young Designer, Well-Being Through Acting, Game Development, and Mobile App Development).

- **Drawing (8 hrs)**

  Students will learn how to execute a freehand drawing from observation. They will use a variety of media including graphite, charcoal, and ink to draw from still life and nature. Basic principles of composition, proportion, and perspective are stressed. This course will also cover the theory of color, and the different types of color mediums and techniques.

- **The Young Designer (8 hrs)**

  This is a fun and engaging course for creative minds to explore graphic design, product design, interior design, and architecture.

- **Well-Being Through Acting (8 hrs)**

  This course utilizes acting techniques and exercises that provide essential tools for

participants' overall well-being and their development as stronger members of their communities, while helping them overcome the anxieties, insecurities, and expectations that they may be experiencing.

- **Game Development (16 hrs)**

  This course introduces students to the fundamentals of programming through the exciting world of game development. They will experience hands-on learning as they create two-dimensional (2D) games using Gamemaker Studio 2, culminating in stand-alone executable games ready to be shared with friends and showcased in their digital portfolio.

- **Mobile App Development (16 hrs)**

  This course provides students with an overview of the mobile app development environment, focusing on the fundamentals of programming in Java. It will cover Android App components and layouts, and tackle views and user interactions. At the end of the course, students will be equipped with the skills needed to develop their own Android App.

Other Activities

The SPAAC team will organize community engagement activities and a cooking session for the whole SPAAC group. SPAAC participants will also enjoy dinner outings to various places in Beirut.

Country Excursions

One-day trips to significant historical and cultural destinations will ensure participants' exposure to the rich diversity Lebanon has to offer.

Among the field trips that may be organized are:

- Visits to archaeological and historical sites in Jbeil, Batroun, Beiteddine, Mousa Castle, and Jeita.
- Hikes in the Cedars and Qadisha Valley
- A visit to a Lebanese beach

Meals and transportation on planned excursions are included in the program cost.

Next Step Program

The "Next Step" program is a collaborative initiative between Next Step NGO and the Continuing Education Center at the American University of Beirut targeting students with intellectual disabilities. It is a university-based higher-education program for youth and adults with intellectual disabilities whose main objective is to introduce an innovative educational environment that facilitates the learning and practice of both vocational and life skills needed to participate in the workforce and reach independent living.

Vision

The “Next Step” program aims at establishing a post-secondary educational program that focuses on and caters for the individual needs and career choices of each student, as per the following criteria:

- The program positively nurtures and supports the students’ strengths and interests.
- The program provides mentoring and guidance in the students’ chosen career paths.
- The program is versatile and diverse in terms of the curriculum and educational set-up, and the tools and strategies that will be used are adaptable to respond to each individual need.
- The program will follow-up on the students’ implementation of the skills they have learned, evaluate their impact, and accommodate their placement and employment.

Program Models

The “Next Step” program is modeled, inspired, and adapted after different models that have been successfully implemented around the world and whose impact has been considered a breakthrough in the lives and quality of employment for people with intellectual disabilities.

Examples of similar programs:

- Lesley University, Threshold Program, Cambridge
- University of Iowa, Reach Program, Iowa City

The main source of curriculum material used by the “Next Step” program is extracted from the Life Centered Education resources published by the Council for Exceptional Children, Virginia. Another source of information and guidance has been Think College, Institute for Community Inclusion, University of Massachusetts, Boston, MA.

The Life Centered Education Program (LCE)

Life Centered Education (LCE) is a research-based program developed by the Council of Exceptional Children led by a task force of leading transition professionals. The LCE curriculum is designed for students who have learning disabilities, mild intellectual disabilities, autism spectrum disorders, and those whose ability to live independently is in question. Since its creation, practitioners and professionals have developed and refined the curriculum so that it continues to provide a viable approach for life skill and transition education for students with special needs. During the process, the curriculum has grown to become the most widely used transition education program used in the U.S. in all fifty states.

The LCE curriculum matrix identifies three critical domains for adults living in the 21st century, and then, it further divides these domains into twenty core competences:

1. Daily Living Skills Teaching students how to use and manage their personal finances, households, personal needs, family responsibilities, food preparation, citizenship responsibilities, and leisure activities.
    1. Managing Personal Finances
    2. Selecting Adequate Housing

3. Caring for Personal Needs
4. Demonstrating Relationship Responsibilities
5. Buying, Preparing, and Consuming Foods
6. Buying and Caring for Clothing
7. Exhibiting Responsible Citizenship
8. Utilizing Recreational Facilities and Engaging in Leisure
9. Choosing and Accessing Transportation

2. Self-Determination and Interpersonal Skills Helping students develop self-awareness, self-confidence, socially responsible behavior, effective interpersonal and communication skills, and positive agency and decision-making.
    1. Understanding Self-Determination
    2. Becoming Self-Aware
    3. Developing Interpersonal Skills
    4. Communicating With Others
    5. Good Decision Making
    6. Developing Social Awareness
    7. Understanding Disability
3. Employment Skills Paving way to employment possibilities and choices by teaching constructive work habits, physical and manual skills, specific job competencies, and seeking and maintaining jobs.
    1. Knowing and Exploring Employment Opportunities
    2. Exploring Employment Choices
    3. Seeking, Securing, and Maintaining Employment
    4. Exhibiting Appropriate Employment Skills

Special courses include computer, art therapy and music therapy classes.

Lesson Plans

The twenty competencies are further divided into ninety-four sub-competencies and broken down by objective. Within each objective are at least three lesson plans that follow an Awareness, Explanation, Preparation (AEP) learning sequence in order to ensure true content mastery. Many lesson plans have accompanying fact sheets, worksheets, and other activities that provide additional engagement and hands-on learning. It is also important to note that while most of the LCE instruction occur within the classroom, a considerable amount of home and community-based experience is also incorporated to maximize impact.

Scholarships and Endowments

Refugees Aid Scholarship

The Continuing Education Center at the American University of Beirut has launched a Syrian Refugee Training Program using a designated fund. The Objective of the program is to equip the participants with tools to help them rebuild their country as well as to enhance their living conditions. The program will provide education for students and teachers by providing:

- The following Five Teaching Certificates: (4 courses each, total of 120 Contact hours)
    - Early Childhood Education (Nursery, KG1, KG2)
    - Special Needs Education (Learning Disabilities | Nursery- Grade 4)
    - Elementary School Education (Grades 1-5)
    - Middle School Education (Grades 6-9)
    - Secondary School Education (Grades 10-12)
- Professional Certificates (4 courses each, total of 120 Contact hours) in the following specializations:
    - Office Management
    - Essentials of Business
    - Associate Project Management
- English Language:
    - Level I
    - Level II
    - Level III
    - Level IV
    - Level V

WAAAUB Abu Dhabi Chapter CEC Endowed Fund

The WAAAUB Abu Dhabi Chapter made a gift that was allocated towards the “WAAAUB Abu Dhabi Chapter CEC Endowed Fund”.

This gift was made by the Chapter to expand the benefits of CEC offerings in Lebanon and the region.

The annual return of the endowment fund will be allocated to support selected CEC Diploma students to complete their CEC diploma courses. The fund will cover up to two courses per student that s/he is taking as part of the graduation requirements for a CEC Diploma after the completion of the relevant CEC Certificate. Scholarship eligibility include:

- First priority: students applying or registered for a CEC diploma program. Scholarship will be offered to student(s) with the highest GPA of courses taken towards the relevant CEC certificate. Any student can benefit up to a maximum of two courses pertaining to a CEC Diploma.
- Second priority: if funding is still available, then eligibility for students registered for CEC Certificate programs will be based on the highest GPA of at least two courses taken by the student towards the CEC certificate. Any student can benefit up to a maximum of one course pertaining to a CEC Certificate.

Endowed Faculty Chairs; Academic Centers, Programs, Institutes; Student Scholarships, Hardships; Fellowships; Awards; and Research Funds

Endowed Faculty Chairs

Faculty of Medicine

- Azeez and Marie El-Khoury Professorship in Ophthalmology
- Iskandar & Olina Haurani Visiting Professorship in Medicine
- The Pillar Genomics Institute of Precision Medicine Endowed Chair
- Raja N. Khuri Deanship for the Faculty of Medicine

Maroun Semaan Faculty of Engineering and Architecture

- Al Mu'allim Mohamed Awad Binladin Chair in Architecture in the Islamic World
- Dar Al-Handasah (Shair & Partners) Endowed Professorship in MSFEA
- Howard W. Page Professorship in Engineering
- Mohammed Abdulmohsin Al-Kharafi Chair in Engineering
- The Qatar Chair for Energy Studies

Suliman S. Olayan School of Business

- The Abdul Aziz Al-Sagar Chair in Finance
- Coca-Cola Chair in Marketing
- Husni Ahmed Sawwaf Chair in Business and Management
- Kamal Shair Chair in Leadership at OSB
- Sheikh Said Himadeh Distinguished Visiting Professorship

Faculty of Arts and Sciences

- Alfred H. Howell Chair in History and Archaeology
- Altaf S. Al Sabah Visiting Chair in Women and Societal Development Studies
- Constantine H. and Bonnie Issidorides Chair in Organic Chemistry
- Edward W. Said Endowed Chair in American Studies
- Jabre-Khawarizmi Endowed Chair in Arabic and Islamic Science
- Mamdouha El-Sayed Bobst Dean of the Faculty of Arts and Science
- Mamdouha El-Sayed Bobst Visiting Professorship

- Margaret Weyerhaeuser Jewett Chair of Arabic
- Mary Fox Whittlesey Visiting Professorship
- Michael Atiyah Chair in Mathematical Sciences
- The Mohammad Atallah Chair for Ethics
- Philippe Jabre Endowed Professorship in Art History and Curating
- Sheikh Zayed Bin Sultan Al-Nahyan Chair of Arab and Islamic Studies

Faculty of Health Sciences:

- Gangarosa Family Endowed Chair for Safe Water and Sanitation

Academic Centers, Programs, and Institutes

Office of the Provost

- Asfari Institute for Civil Society and Citizenship
- Center for Advanced Mathematical Sciences (CAMS)
- Center for Civic Engagement and Community Service (CCECS)
- Center for Teaching and Learning
- Continuing Education Center
- Farouk Jabre Center for Arabic and Islamic Science and Philosophy
- Global Health Institute (GHI)
- Issam Fares Institute for Public Policy and International Affairs (IFI)
- Munib and Angela Masri Institute of Energy and Natural Resources
- Nature Conservation Center (NCC)
- Palestine Land Studies Center (PLSC)

Faculty of Agricultural and Food Sciences

- Advancing Research Enabling Communities Center (AREC)
- Environment and Sustainable Development Unit (ESDU)
- The Laboratories for The Environment, Agriculture and Food (LEAF)

Faculty of Arts and Sciences

- Anis K. Makdisi Program in Literature

- Center for Arab and Middle Eastern Studies (CAMES)
- Center for Arts and Humanities (CAH)Critical Humanities for the Liberal Arts (CHLA) Program
- Environmental Policy Planning Program (ENVP)
- Graduate Program in Computational Sciences (GPCS)
- General Education (GE) Program
- Islamic Studies Program
- Institute of Financial Economics (IFE)
- Kamal A. Shair Central Research Science Laboratory
- Science and Mathematics Education Center (SMEC)
- Prince Alwaleed Bin Talal Bin Abdulaziz Alsaud Center for American Studies and Research (CASAR)
- Science and Mathematics Education Center (SMEC)
- The Writing Center
- University Preparatory Program (UPP)
- Zaki Nassif Music Program (ZNMP)

Faculty of Health Sciences

- Center for Public Health Practice (CPHP)
- Center for Research on Population & Health (CRPH)
- Knowledge-to-Policy (K2P) Center

Faculty of Medicine

- Abu-Haidar Neurology and Behavioral Science Center (AHNI)
- Children's Cancer Institute
- Children's Heart Center
- Clinical Research Institute
- Hamdi Al Zaim Interstitial Lung Disease Outpatient Center
- Health & Wellness Center
- Naef K. Basile Cancer Institute (NKBCI)
- Nehme and Therese Tohme Multiple Sclerosis Center

- Pillar Genomics Institute of Precision Medicine
- Salim El-Hoss Bioethics and Professionalism Program
- Women's Health Center
- Wound Care Center

Maroun Semaan Faculty of Engineering and Architecture

- Munib and Angela Masri Institute of Energy and Natural Resources
- Rada and Mutaz Sawaf Center for Arab Comics Studies

Suliman S. Olayan School of Business

- Center for Women in Business (CIBL)
- Samih Darwazah Center for Innovation Management and Entrepreneurship
- Rami F. Makhzoumi Corporate Governance Initiative (RMCGI)

Multidisciplinary and Inter-faculty

- Center for Systematic Reviews on Health Policy and Systems Research
- Charles Hostler Student Center
- Evidence-Based Healthcare Management Unit
- Global Health Institute
- Humanitarian Engineering And Public Health Innovations Unit
- Kadifa Family Computer Science and Engineering (CSE) Program Fund
- Talal and Madiha Zein AUB Innovation Park (Zein AUB iPark)

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- Ahmad and Shirine El Khatib Endowed Scholarship
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- Ahmad S. Zaabri Endowed Scholarship
- Ahmad Shamsuddin Memorial Endowed Scholarship
- Aida Ashur Hannun Endowed Scholarship

- Ajialouna Scholarship
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- Al-Anoud Afif Al-Mahmassani Scholarship
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- Albert and Loreen Rihani Endowed Scholarship
- Alfred & Dina Khoury Nursing Scholarship
- Ali and Layla Nsouli Scholarship
- Ali and Leila Makki Scholarship
- Ali El-Bachir Scholarship
- Ali Ghandour Endowed Scholarship
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- Ali Nesr Educational Program (ANEP) Fund
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- AlJaber Engineering Scholarship
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- Alumni Class Reunion Endowed Scholarship
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- Anis Bibi Endowed Scholarship
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- Anthony Bing Scholarship
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- Antoine Saad Hamra Memorial Endowed Scholarship Fund
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- Antoun Saadeh Cultural Foundation Current Scholarship
- Antoun Saadeh Endowed Scholarship
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- AUB Scholarship Fundraising Committee Endowed Scholarship
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- Hassan Husseini – Eastern Province Endowed Scholarship
- Hassan Mohamed Halaby Endowed Scholarship
- Hassan Smadi Endowed Scholarship
- Hassib J. Sabbagh Endowed Scholarship
- Hazar - AUB Development Scholarship
- Hazel Reed Baumeister Trust Endowed Scholarship
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- Hazimeh S. Rasi Scholarship Fund
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- HH Sheikh Dr. Sultan Bin Mohamed Al Qasimi Endowed Scholarship for FHS-Ford Foundation Match
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- John Makhoul Scholarship
- John Miskoff Endowed Scholarship
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- Juergen Lorenz Endowed Scholarship
- Julia Dodge Rea Scholarship
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- Khalil Tabet Memorial Endowed Fund
- Khawla Hobeika Rizk Endowed Scholarship
- Khushroo N. J. Patel Memorial Endowed Scholarship
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- LASeR - AUB Graduate Scholarship
- LASeR - Graduate Scholarship
- Laurice Khoury Maalouf Scholarship
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- Lebanese International Finance Executives (LIFE) Scholarship Award
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- Matiel Mogannam Endowed Scholarship
- May El Khalil Endowed Scholarship for Exceptional Athletes
- May Rihani Endowed Scholarship
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- Mazen Dajani Scholarship
- MD Class of 1994 Scholarship
- MD Class of 1998 Fund
- MEAB OSB Student Solidarity Fund
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- Michel Alexandre Namour Memorial Endowed Scholarship
- Michel Rais Endowed Scholarship
- Micheline and Francois Nader Endowed Scholarship
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- Mohamad Ali Zameli and Dina Tabbara Endowed Scholarship
- Mohamad S. Dimashkieh Endowed Scholarship
- Mohamad Samih Ghaddar Scholarship
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- Mohammad Al Saadi Scholarship
- Mohammad Hassan El-Chaar Memorial Scholarship
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- Mona Chemali Khalaf Endowed Scholarship
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- Nasser Jalal Bitar Scholarship

- Nasser Saidi Scholarship
- Nazih and May Taleb Endowed Scholarship
- Near East Scholarship Fund
- Nemeh and Maha Sabbagh Endowed Scholarship
- Nerces and Diana Dermenjian Endowed Scholarship
- Nicholas and Claudia Barakat Scholarship
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- Nizam Shammas Scholarship
- Nizar Banat Memorial Scholarship
- Nouhad and Rasha Daouk Scholarship
- Noura Hatem Juffali Endowed Scholarship
- Novus Aviation Capital Scholarship
- Odette Atalla Scholarship
- OF Scholarship
- Oliver Maki Endowed Scholarship
- Oliver Maki Scholarship
- Osama Hadid Scholarship
- OSB General Scholarship
- OSB International Student Scholarship
- Osmane Aidi Scholarship Fund
- Oussama Aboughazale Scholarship
- Palestinian Cultural Club Scholarship Fund
- Palestinian Students Emergency Fund
- Palestinian Students' Fund - Scholarship
- Pauline Nadim Makdisi Memorial Scholarship
- Petrofac Fund for Engineers
- Philip and Mary G Hitti Endowed Scholarship
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- Professor Khalil Malouf Memorial Scholarship Fund
- Professor Maan Z. Madina Endowed Scholarship
- Professor Nabil and Mrs. Huda Dajani Endowed Scholarship
- Quencia Capital Scholarship
- R. Bayly Winder Endowed Scholarship
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- Rafeek Program Scholarship
- Raffy Manoukian Scholarships
- Rafic Gazzaoui Scholarship
- Rafic Hariri Endowed Scholarship for Nursing Students
- Rafic Hariri School of Nursing General Scholarship
- Raja Tannous Endowed Scholarship
- Raja Trad Dubai Alumni Endowed Scholarship
- Raji and Fawzieh Sinno Scholarship in Agriculture
- Rami Bitar Scholarships
- Ramsey U. Sheikh Scholarship
- Ramzi and Marianne Hakim Scholarship
- Ramzi F. Daouk Memorial Endowed Scholarship
- Ramzi Fawaz Scholarship
- Ramzi K. Alamuddin and Asma M. Fathallah Endowed Scholarship
- Ramzi Kteily Scholarship
- Ramzi Mohamad Safadi Endowed Scholarship in FAS
- Ramzi Mohamad Safadi Scholarship in FHS
- Ramzi Raad Advertising Scholarship
- Rana Ahmad Hajjeh Scholarship

- Randa El-Sayed and Naseem Haffar Fingerprints Endowed Scholarship
- Ray R. Irani Endowed Scholarship
- Reem Acra Scholarship
- René Saade Scholarship
- Reverend Dr. Lois A. Aroian Endowed Scholarship
- Riad and Hassana Sadik Endowed Scholarship
- Riad Kamal Scholarship
- Riad Mneimneh Scholarship
- Rida Irani Memorial Endowed Scholarship
- Rima Abdul Jabbar Endowed Scholarship
- Rima Aiko and Maya Farah Makhoul Financial Aid Fund
- Rima Moussallem Otrakji Endowed Scholarship
- Robert and Myrle Linnell Endowed Scholarship
- Roosevilt and Georgette Fattouh Endowed Scholarship Fund
- Roula and Fouad Tamer Scholarship
- Ruhi K. Hindawi Endowed Scholarship for Medical Students
- S. M. Minassian Endowed Scholarship
- Saadat Hasan Endowed Scholarship
- Sabbah Media Corporation Scholarship
- Sabra Purtill Endowed Scholarship
- Sadie B. Latouf Endowed Scholarship
- Said and Angela Hitti Endowed Scholarship
- Said and Insaf Agha El Shami Scholarship
- Said and Marianne Darwazah Scholarship
- Said Khalaf Scholarship
- Salem Suleiman Al-Othman Memorial Endowed Scholarship
- Salwa Es-Said Endowed Scholarship
- Samer and Hiba Al-Rayyes Endowed Scholarship
- Samer and Hiba Al-Rayyes Scholarship

- Sami Kteily Scholarship
- Sami Maurice Atallah Scholarship
- Sami Mubarak Endowed Scholarship
- Sami Sidawi Endowed Scholarship
- Samia Ghobril Endowed Scholarship
- Samia Taji Farouki Arts and Sciences Merit Scholarship
- Samih Alami Memorial Endowed Scholarship
- Samih Alami Scholarship
- Samir & Salwa Khoury Scholarship
- Samir Ahmad Zaabri Scholarship
- Samir and Malak Abdulhadi Scholarship
- Samira AbdelKader Kalache Scholarship
- Samira Fadli Scholarship Fund
- Samuel B. and Grace H. Kirkwood Scholarship
- Samuel Van Allan Undergraduate Scholarship
- Sansabil AbuRaslan Current Scholarship
- Sansabil AbuRaslan Endowed Scholarship
- Sarah Al-Turki Endowed Scholarship
- Sarah and Rafic Kaaki Endowed Scholarship
- Selma Shaheen Nursing Scholarship
- Serene Dajani Memorial Scholarship Fund
- Shafic Melhem Shabshab Endowed Scholarship
- Shafik and Mary Tumeh Endowed Scholarship
- Shaheen Brothers Endowed Scholarship
- Shawki Gholmieh Endowed Scholarship Fund
- Sheikh Mohamad Soleiman Scholarship
- Shireen Abu Akleh Endowed Memorial Scholarship
- Shocair-Reda Scholarship
- Sidani Scholarship Fund

- Simone Fattal and Etel Adnan Endowed Scholarship
- Sleyman and Sofia Trabulsi Endowed Scholarship
- Souad Malaeb Zobian Scholarship
- Soumaya Makdisi Khuri Endowed Scholarship
- Spring Scholarship
- SSG - AUB Scholarships
- Stella B. Kern Endowed Scholarship
- Stephen A. Miller Endowed Scholarship
- Strategy& Endowed Scholarship
- Student Solidarity Fund
- Student Solidarity Scholarship
- Sudan Students Endowed Scholarship
- Sufyan Saleh Scholarship
- Suhayl Assaf Farah Endowed Scholarship
- Suhayla Harami Georges (Dipl Nursing 1956) and George Georges (MD 1990) Scholarship
- Suheil and Shermine Bulos Endowed Scholarship
- Sulayman Salim Alamuddin Memorial Endowed Scholarship
- Suliman S. Olayan Endowed Scholarship
- Syria Resilience Fund
- Syrian and Lebanese Students Scholarship Fund
- Syrian Students Hardship Fund
- T.A.K. Scholarship
- Taawon Scholarship
- Talal Nasereddin Scholarship
- Tamim and Lamis Sahli Endowed Scholarship
- Teddy and Diana Abdo Endowed Scholarship Fund
- Terry and Pierre Aboukhater Endowed Scholarship
- Teta Endowed Scholarship

- The Abdulrahim Abuissa Memorial Scholarship in Agricultural and Biosystems Engineering
- The Advancement of Women in Engineering Scholarship
- The Aisha Al Mana Endowed Graduate Scholarship for Women in Nursing and the Health Sciences
- The Alexis and Anne-Marie Habib Foundation Scholarship
- The Altaf S. AlSabah Endowed Scholarship for Arab Women
- The Ameen and Sophia, Taft and Nelly Antoun Endowed Scholarship
- The Armenian Catholicosate of Cilicia Scholarship Fund
- The Armenian Students Endowed Scholarship Fund
- The Bassam Hamdi Al Aker Scholarship in Agricultural and Biosystems Engineering
- The Brummana High School Cultural Society Endowed Scholarship
- The Cleveland H. Dodge Foundation Endowed Scholarship (Ford Foundation Match)
- The Cleveland H. Dodge Foundation Scholarship
- The Dorothy Fahs-Beck Endowed Scholarship Fund
- The Fadi and Maha Makki Scholarship
- The Family of Khaireddine El Jisr Endowed Scholarship
- The Family of Late Najib Daoud Sahyoun Endowed Scholarship
- The George Abu Khader Scholarship Fund
- The George and Mary Farah Endowed Scholarship
- The Hassun Scholarship
- The Herter Endowed Scholarship
- The Houda Idriss Memorial Endowed Scholarship Fund
- The IC Alumni Association - AUB Scholarship
- The Karim El Arab Endowed Scholarship for Distinguished Athletes
- The Khayreddine and Adel Abdul-Wahab Endowed Scholarship
- The Makassed - AUB Scholarships
- The Maximilian E. & Marion O. Hoffman Endowed Scholarships
- The Maximilian E. & Marion O. Hoffman Foundation, Inc. Endowed Scholarship for Medical Students

- The Medicine Class of 1982 Endowed Scholarship Fund
- The Nada Suheil Muasher Endowed Scholarship Fund
- The Nemr and Helene Chamoun Scholarship
- The Peggy Smith Scholarship
- The Ramez Mikdashi Endowed Scholarship
- The Sami Kassar Scholarship
- The Spark of Hope Foundation Scholarship
- The State of Qatar Endowed Scholarship
- The Suad Husseini Juffali Endowed Scholarship
- The Tarraf Foundation Scholarship Program
- The Taufik Pacha Moufarrige Scholarship Award
- The Wellspring Learning Community Endowed Scholarship
- Tomooh Scholarship Fund PepsiCo - Ajialouna
- Tony and Lak Bikhazi Scholarship
- Toufic and Oumaya El Zouheiri Endowed Scholarship
- Transmed Scholarships
- Trustee Amabel James Nursing Scholarship
- Trustee Amabel James Student Solidarity Scholarship
- ULYP Scholarship
- USFC Endowed Fund
- Violette Haddad Kteily Memorial Endowed Scholarship
- Viviane Tabar Scholarship
- UNIFERT Student Development Endowed Fund
- WAAAUB - Oman Chapter Scholarship
- WAAAUB - Abu Dhabi Chapter Endowed Nursing Scholarship
- WAAAUB - Abu Dhabi Chapter Endowed Scholarship
- WAAAUB - Abu Dhabi Chapter Endowed Scholarship for FAFS
- WAAAUB - Abu Dhabi Chapter Endowed Scholarship for FHS
- WAAAUB - Abu Dhabi Chapter Endowed Scholarship for Undergraduate FHS

- WAAAUB - Abu Dhabi Chapter Medical Sciences Endowed Scholarship
- WAAAUB - Abu Dhabi Chapter Scholarship
- WAAAUB - Atlanta Chapter Endowed Scholarship
- WAAAUB - Australia Chapter Scholarship
- WAAAUB - Dubai and Northern Emirates Chapter Endowed Scholarship
- WAAAUB - Dubai and Northern Emirates Chapter Scholarship
- WAAAUB - Eastern Province Chapter Endowed Scholarship
- WAAAUB - Engineering and Architecture Chapter Endowed Scholarship
- WAAAUB - Greece Chapter Endowed Scholarship
- WAAAUB - Houston Chapter Endowed Scholarship
- WAAAUB - Jeddah Chapter Endowed Scholarship
- WAAAUB - Kuwait Chapter Endowed Scholarship
- WAAAUB - Kuwait Chapter Scholarship
- WAAAUB - Mount Lebanon Branch Scholarship
- WAAAUB - New England Chapter Endowed Scholarship
- WAAAUB - New York Tristate Area Chapter Endowed Scholarship
- WAAAUB - Oman Chapter Endowed Scholarship
- WAAAUB - Ottawa Chapter Scholarship
- WAAAUB - Philadelphia/Delaware Valley Chapter Endowed Scholarship
- WAAAUB - Qatar Chapter Endowed Scholarship
- WAAAUB - Riyadh Chapter Endowed Scholarship
- WAAAUB - Riyadh Chapter Endowed Scholarship for FHS
- WAAAUB - Swiss Chapter Endowed Scholarship
- WAAAUB - Syria Chapter Scholarship
- WAAAUB - UK Limited Endowed Scholarship
- WAAAUB- AUB Alumni Club of Jordan Palestinian Scholarship
- WAAAUB- Dubai & Northern Emirates Chapter Fund for Graduated Students
- WAAAUB Dubai Chapter Student Aid Scholarship
- WAAAUB Greater Los Angeles Chapter Endowed Scholarship Fund

- WAAAUB Orange County Chapter Endowed Scholarship
- Wadi N. Suki, MD Scholarship
- Wael Jalal Bitar Pay it Forward Scholarship
- Wa'el Nohad Chehab Endowed Scholarship for Business
- Wahida and Dina Mikati Scholarship
- Walid and Nada Abushakra Endowed Scholarship
- Walid Chammah Scholarship
- Walid Joumblatt Endowed Scholarship
- Walid Joumblatt Scholarship
- Wellspring Learning Community Employees Scholarship Fund
- WHISH Fund
- William and Aida Haddad Endowed Scholarship for Engineering
- William and Huda Zoghbi Endowed Scholarship for Medical Students
- William and Huda Zoghbi Scholarship
- William J. Gossen Fund
- William Mitri Endowed Scholarship
- Women Leaders in Engineering Scholarship
- Women's Auxiliary Nursing Scholarship
- Women's League Scholarship
- Yasser and Lala Ezzedine Scholarship
- Yasser and Zeina El-Hajj Endowed Scholarship
- Youssef Matar and Madeleine Ghantous Matar Scholarship
- Yusef Abu Khadra Endowed Scholarship
- Yusuf and Najat Zarour Dubai Alumni Endowed Scholarship
- Yusuf Mansour Scholarship
- Zahir and Wahida Fansa Scholarship
- Zahra Bissat Endowed Scholarship Fund
- Ziad and Ruan Elkhalil Scholarship
- Ziad Beydoun Endowed Memorial Scholarship

- Ziad Korban Endowed Scholarship
- Zohrab A. Kaprielian Endowed Scholarship
- Zouheir Chafic Daouk Memorial Endowed Scholarship

Fellowships

- Anonymous Pierre Amin Gemayyel Endowed Doctoral Fellowship in MSFEA
- Dr. John I. Makhoul Endowed Fellowship
- John Waterbury Endowed Fellowship Fund
- Louise L. Massabki Fellowship-Scholarship
- Maroun Semaan Foundation Endowed PhD Fellowship
- Marwan Chedid Endowed Fellowship
- Mohamad Makhzoumi Endowed Fellowship Fund
- Moufid Farra Endowed Education Fund
- Nayel Al Harith Endowed Fellowship Professor Maan Z. Madina Endowed Fellowship
- MSFEA Research Endowment
- Zakhem Endowed Fellowship

University Prizes and Awards

Penrose Award: Non-cash honorary award made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

Farid Saab Student Athlete Award: Awarded to a full-time student who has been a varsity athlete for at least one year, has maintained an average of at least 77 and has been a member of an athletic team that is one of the top two ranked teams in the national league in the previous year. Awardee should be expected to have earned regional and international awards and/or medals and will embody the very highest standards of sportsmanship and leadership.

Distinguished Student-Athlete Endowed Award: Awarded on equal basis to both female and male athletes who have excelled in sports; top two winners of local or regional championships (Average 77 or above).

Salwa Siniora Baasiri Exceptional Volunteer of the Year Endowed Award: Awarded to one undergraduate student who meets the following criteria as evaluated by AUB's Director of CCECS: Maintains a high academic standing, volunteers in innovative areas leading to a positive impact, dedicates a substantial number of volunteer hours, demonstrates traits of reliability, integrity, commitment, and teamwork, demonstrates commitment to diversity, equity, and inclusion.

The Brummana High School Cultural Society Excellence Award: Awarded to the top graduate student who is a Brummana High School alumnus with a high average.

WAAAUB - Abu Dhabi Chapter Student Endowed Award: Awarded to the student with the highest GPA in each faculty, who graduated from a high school in Abu Dhabi.

Mary Jones Memorial Award: Awarded to a graduating female student who exemplifies outstanding commitment to community service and volunteerism.

Dr. Hassan Abbas Endowed Award in Citizenship and Social Justice: Awarded to a graduating student who has a record of academic excellence, shows a commitment to citizenship, social justice, and freedom as well as promotes tolerance and inclusivity. The student must be receiving a minimum of 20% financial aid to qualify for the award.

FAS Mamdouha S. Bobst Student Award for Civic Engagement: Awarded to a graduating student who has a record of academic excellence and has shown a commitment to civic engagement.

Abdul Kader Sbaiti Spirit in Sports Endowed Award: Awarded to student who is involved in varsity sports and shows exemplary team spirit, fair play, and integrity in sports.

Mercury Prize for Distinguished Athlete: Awarded to qualified athletic student(s) who is/are professionally involved in a sport as evaluated by the AUB Athletic Department. This award will be used to cover tuition fees.

Nabil Boukhaled Endowed Excellence Award in Computing: Awarded to a graduating student who has demonstrated an excellence in the field of computing.

Faculty of Agricultural and Food Sciences

Abdul Hadi Debs Endowment Award for Academic Excellence: Awarded to a graduating student who has an outstanding academic record. The award is given to one student in the Faculty of Agricultural and Food Sciences, one in the Faculty of Arts and Sciences, and one in the Maroun Semaan Faculty of Engineering and Architecture.

Dean Edgecombe Memorial Prize: Awarded to the outstanding student in third year agriculture.

Kashadurian Award: Awarded to a deserving student who was at AREC and has shown outstanding performance in farm skills and practices, and an appreciation for farm life at AREC.

Dean Thomas M. Sutherland Prizes: Awarded annually at graduation to outstanding FAFS graduates. Awarded to the undergraduate recipient of the Penrose award as well as the most outstanding graduate student with the best thesis.

Dean Nuhad Daghir FAFS Graduate Student Award: Awarded to the graduating student with a Master's degree in the Animal Science or Poultry Science major at the Faculty of Agricultural and Food Sciences who succeeded to accumulate the highest average over his/her graduate studies at AUB.

Dr. Musa Najib Nimah Endowed Award for Academic Excellence: Awarded to an undergraduate student who has the highest cumulative GPA.

Nehme Moujaess Student Award in Landscape Architecture: Awarded to final year Landscape Architecture students whose final year project is selected by the department as the most deserving.

Ali Nehme Nesr Student Award: This is a competitive, graduate or undergraduate level award for research or development thesis/capstone/FYP topics in the MENA and Sub-Saharan Regions. All FAFS disciplines are eligible to be considered as long as the topics revolve around WEFRAH nexus (commodities, value chain, processing, marketing, product innovation or any related topic in emerging markets in the MENA region and Sub-Saharan Africa specifically).

Nahla Hwalla Endowed Award in Nutrition and Dietetics: Awarded to the graduating students in nutrition and dietetics who have exhibited collegiality and leadership with active engagement in student life to promote principles of nutrition and wellbeing.

Rabi and Samia Mohtar Award: Awarded to a graduating FAFS student who demonstrated leadership and potential to impacting the food and agriculture system and with a documented financial need.

Director Fawwak Slieman - Dean John Fischer Endowed Award: Awarded to an undergraduate student who meets the following criteria: a 3rd or 4th year student who has committed to a FAFS major, demonstrates financial need and academic promise in the fields of agriculture, food or water security in the Middle East region or Africa.

Dr. Yusuf Abou Jawdah Endowed Award: Awarded to 3rd or 4th year undergraduate Agriculture student who has the highest cumulative average in at least three plant protection courses and shows a good understanding of the principles of food safety and sustainable agricultural development and demonstrates the ability to provide environmentally safe and innovative solutions/recommendations to deal with damaging and new or emerging plant pests.

Boecker Prize for Excellence: The Three Minute Thesis (3MT®) is an international competition celebrating the exciting research conducted by graduate students. Developed by the University of Queensland in 2008, the competition requires contestants to condense their research into a three-minute, one-slide presentation for a non-specialist audience.

Aiman Suleiman Student Development Fund: Awarded to a student or a team who receives the highest ranking for the Capstone Project.

Faculty of Arts and Sciences

Abdul Hadi Debs Endowment Award for Academic Excellence: Awarded to a graduating student who has an outstanding academic record. The award is given to one student in the Faculty of Agricultural and Food Sciences, one in the Faculty of Arts and Sciences, and one in the Maroun Semaan Faculty of Engineering and Architecture.

Murad al-Akl Awards: Competition organized by the Department of English for the best essay, speech, or debate on the subject of “How I Can Serve My Fellow Man”.

Abdallah Lahoud Foundation Endowed Award: Awarded to an undergraduate student with the highest average in history or archeology.

Shehadeh Abboud Memorial Excellence Award in English Language: Awarded to a graduating student majoring in English with the highest average in the major English courses.

HE Ghassan Al-Rashash Excellence Award in Political Studies: Awarded to a graduating student with the highest average in the graduate program in Political Studies.

Sheikh Fawzi Azar Memorial Prize: Awarded to student(s) in SBS with a commendable paper or study submitted to the department. Annual balance will be used for the purchase of educational materials and subscription to scientific journals.

The Educators' Endowed Award in Education: Awarded to one or two outstanding in the Education Department in acknowledgment of their achievement. These students should have known innovation, performed community service and had an average of 75 or above.

Dr. Fuad Said Haddad award in Education: Awarded to the graduate MA student in Education with the best thesis as selected by the Education department of the Faculty of Arts and Sciences.

Makhlouf Haddadin Award for the Outstanding Chemistry Undergraduate Student: Awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

Makhlouf Haddadin Award for Outstanding Chemistry Graduate Student: Awarded at the end of each academic year to a graduating MS chemistry student with outstanding research and academic record.

Dr. Philip K. Hitti Prize: Awarded to the senior student in the Faculty of Arts and Sciences who, in the judgment of the president of the university, the dean of the faculty, and the chairman of the department concerned, exemplifies in her/his academic career the scholarly spirit of AUB at its best.

Mrs. Jinan Majzoub Excellence Award in English Literature: Awarded to a graduating student with the highest average in the graduate program in English literature.

The Muhanna Foundation in Mathematics Award of Excellence: Awarded annually to the most outstanding senior Lebanese student in the Department of Mathematics.

Amal Saidi Memorial Prize: Awarded to a graduating senior excelling in the subject of anthropology or sociology.

Majida Sanioura Memorial Prize in Humanities: Awarded to a top graduate senior in arts and humanities at the Faculty of Arts and Sciences.

Suad Sabbagh Sanioura Memorial Prize: Awarded to a graduating majoring in economics, in a very good academic standing.

M&C Saatchi MENA Award: Awarded to one or more graduating students in the Media Studies Program, Department of Sociology, Anthropology and Media Studies, with the highest academic achievements.

Lebanon Renaissance Foundation Award: Awarded to one or more graduating students in political studies, economics, social and behavioral sciences, public administration or history with the highest academic achievements.

William Van Dyck Endowed Award in Biology: Awarded to the graduating senior student with the highest average.

Dr. Randa Antoun Annual Award for Public Service and Civic Engagement: Awarded to

an outstanding senior student in PSPA.

Professor Fuad I. Khuri Award in Anthropology: Awarded to an outstanding Lebanese student graduating with a master's degree in Anthropology. If in a given year no graduate student in Anthropology was identified to meet the stated criteria, the award will be given to a graduate student majoring in Middle Eastern Studies.

Mark Sawaya Endowed Award: Awarded to the graduating senior student in Computer Science with the highest average.

Nadim Khalaf Endowed Award: Awarded to a senior economics student with the highest average.

Remy Rebeiz Award in Economics: awarded to a junior student majoring in economics who has the highest average in a specific set of economics, mathematics, and humanities courses.

Dr. Basil Fuleihan Excellence Award in Economics: Awarded to the graduating student with a BA degree in Economics who succeeded to accumulate the highest average over his/her period of study.

Dr. Mohammad Chatah Excellence Award: Awarded to the graduating student with a BA degree in Political Studies who succeeded to accumulate the highest average over his/her period of study.

Jack and Hoda Afram Manok Endowed Award: Awarded to a graduating student in Education with the highest GPA.

Kamel Mrowa Award in Media Studies: Awarded to a graduating student with a Master's degree in Media Studies who demonstrates outstanding academic achievement (above 90 average) and successfully completes his/her end-of-year project or thesis with a topic revolving around the past, present or future of Journalism.

Usama al-Khalidi Endowed Award: Awarded to an outstanding senior student majoring in Biology who has demonstrated academic excellence as well as a commitment to community service and/or passion of arts.

Hussein Oueini Memorial Awards: Awarded equally between a graduating senior student in PSPA with the highest average and the best thesis written during the same academic year, as recommended by the department and dean.

Ibrahim and Loulu Durr Endowed MRVP Award: Two awards given annually to two students (one male, one female) enrolled in MRVP who have demonstrated outstanding medical research capabilities, based on the MRVP committee evaluation. Special consideration will be given to students who have shown outstanding research capabilities in the biochemistry field.

President Elias Hraoui Endowed Student Award in Economics: Awarded to an outstanding graduate economics student accepted in a PhD program and to an outstanding undergraduate student who has shown leadership and scholastic work in the economic Student Society.

Selma Mirshak and Mohsen Slim Endowed Student Award: Awarded to a graduate student majoring in sociology who has conducted best field work research.

Antoun Saadeh Cultural Foundation Best Student Essay Endowed Award: Awarded to the outstanding student essay on social reform in the Arab World.

Dr. Assaad Khairallah Endowed Award in Social Sciences: Awarded to an undergraduate student pursuing a Sociology/Anthropology major or a graduate student in Sociology who submits the best paper in Arabic during his/her period of study.

Hana Jabsheh Endowed Award: Awarded to an undergraduate student majoring in the department of Fine Arts and Arts History, with the highest GPA.

Professor Mohamed Harajli Excellence Award in Humanities: Awarded to the top student in humanities.

Professor Ramzi Mounir Baalbaki Excellence Award in Arabic: Awarded to the top graduating with an undergraduate degree in Arabic or to a top graduating student with a Master's degree in Arabic.

Samir Makdissi Award in Economics: Awarded to a graduate student in economics for the best project/thesis.

Salim Ali Salam Endowed Award: Awarded to a graduate student with the best graduate thesis in Ottoman or Arab studies in the fields of History, Political studies and Middle Eastern Studies.

MT2 Best Achievement Award: Awarded to the computer science student(s) who prove their achievements through an acquired and demonstrated skillset across various accomplishments in specific area(s) of computer science.

Mona Chemali Khalaf Endowed Award: Awarded to the undergraduate student majoring in economics who has the highest GPA in the fall term of his/her graduating year.

Anwar Salman Award in Literature: Awarded to a graduating undergraduate student in Arabic in recognition of creative writing skills and exceptional research related to poetry and/or the literary works of Anwar Salman.

CCT Computer Science Student of the Year Award (Undergraduate): Awarded to an undergraduate computer science student who has an outstanding academic record and actively participates in events organized by the Computer Science Department and the Computer Science Society.

CCT Computer Science Student of the Year Award (Graduate): Awarded to a graduate student in computer science with a record of achievement in research, academics, and service.

Khawla Hobeika Rizk Endowed Award in Education: Awarded to the top senior female student in education.

Murex Best Collaborative Development Project: This award recognizes teamwork, group spirit, and collaboration in support of a development projects across different industries, geographies, and departments.

Murex Best Computer Science Student in Development: This award honors the top computer science student who has focused in his/her courses, projects, internships, and research assistant assignments on development and programming.

Murex Best Innovative Development: The award recognizes and rewards development projects that spotlight ideas, concepts, and methodologies that are "out of the box".

Wadia Noureddin Endowed Award in Biology: Awarded to a graduating student who demonstrates excellence in his/her academic studies in biology, as well as a mature commitment to a career in the same or related field.

Burhan and Rabab Baalbaki Award in Elementary Education: The Burhan and Rabab Baalbaki Award in Elementary Education is conferred on a graduating student in Elementary Education who demonstrates excellence in his/her academic studies.

Poet Said Fayad Graduate Prize in Literature and Humanities: Awarded to a graduate student in Arabic who participates in the Al-Abhath Essay Prize competition.

Samia Abdul Basset Siniora Endowed Award in Education: awarded to an AUB undergraduate student completing his/her BA in education who has demonstrated a record of academic excellence, a commitment to the education pledge, promote moral and academic excellence, tolerance, inclusivity, and innovation in education, and is on financial aid.

Haykal Media Award in Arabic: Awarded to the top graduating student majoring in Arabic with the highest cumulative average during his/her undergraduate studies.

Randa Azzam Khoury Endowed Award in Education: Awarded to a graduating education Teaching Diploma (TD) student, with preference to Elementary Education.

Nader Prize for Excellence in Arabic Language and Literature: Awarded to a graduating student in the Department of Arabic and Near Eastern Languages who has achieved the highest academic distinction and/or creativity during her/his tenure as an undergraduate.

Ahmad and Fadwa Dannawi Award: Awarded to graduate MA or diploma student in Islamic studies who has demonstrated academic excellence and commitment.

Dana Kambris Memorial Award: awarded to a senior Economics student leading community service through apolitical and asectarian volunteering.

Teddy Christidis Excellence Award in Physics: awarded to an excelling student graduating with a bachelor's degree in physics who has demonstrated depth and maturity and a keen appreciation of physics.

Maroun Semaan Faculty of Engineering and Architecture

Narine Bolghourjian Exemplary Engagement Endowed Award : Awarded to an undergraduate student in recognition of leadership, character, and contribution to the AUB life/community.

Abdul Hadi Debs Endowment Award for Academic Excellence: Awarded to a graduating student who has an outstanding academic record. The award is given to one student in the Faculty of Agricultural and Food Sciences, one in the Faculty of Arts and Sciences, and one in the Maroun Semaan Faculty of Engineering and Architecture.

Farouk W. Agha Excellence Award: Awarded to a graduating student with a BE degree in Mechanical or Civil Engineering who accumulated the highest average during her/his period of study at AUB.

Fawzi W. Azar Award: Awarded annually toward the tuition of one or more fifth year

student(s) in the architecture program of the Maroun Semaan Faculty of Engineering and Architecture based on a project they present in their fourth year that is deemed best by a special jury.

Dean's Award for Creative Achievement: Awarded to a student in each of the main programs of the Maroun Semaan Faculty of Engineering and Architecture (architecture, graphic design, civil engineering, computer and communications engineering, electrical engineering, and mechanical engineering) who has demonstrated outstanding creativity in her/his approach to academic work.

The Distinguished Graduate Award: Awarded to a graduating student in each of the undergraduate engineering programs of the Maroun Semaan Faculty of Engineering and Architecture (civil engineering, computer and communications engineering, electrical engineering, mechanical engineering) in recognition of outstanding academic achievement, character, and contribution to the faculty throughout her/his tenure in the faculty.

Youssef M. Salam Civil Engineering Excellence Award: Awarded to a graduating student with a BE degree in Civil Engineering who accumulated the highest average during her/his period of study at AUB.

George R. Rais Endowed Architecture Awards: They are awarded to three students in their third year of studies pursuing a degree in Architecture. Selection is based on best project as determined by the Administrative Committee of the Department of Architecture. The first prize is $8,000, the second prize is $5,000, and the third prize is $3,000.

The Holcim Endowed Award in MSFEA: An annual award for the best project at the Department of Civil and Environmental Engineering.

Hayat Salam Liebich Travel Award in Islamic Architecture: Awarded to a student in his fourth, fifth year or a graduate student of Architecture, to enable research in Islamic architecture as a travel grant.

Nicolas and Faride Moujaes Student Award in Engineering: Awarded to graduating student/students who presented the most innovative final year project.

Mohamad Ali Safieddine Endowed Award for Academic Excellence: Awarded to a graduating student who is receiving financial assistance and has a high academic record, in addition to demonstrating good character as per his/her professors.

Resource Group Entrepreneurship Award: Awarded to students who present the best project in Cybersecurity or Privacy to support the establishment of a startup.

Faculty of Health Sciences

Kiram Sanioura Memorial Prize in Public Health: A certificate and prize will be awarded to the graduating student completing his/her undergraduate studies with the highest GPA in the Environmental Health program or Health Communication program at the Faculty of Health Sciences.

Abdelbasset Ahmad Sanioura Memorial Prize in Health Professions: A certificate and a prize will be awarded to the graduating student completing his/her undergraduate studies with the highest GPA in one of the disciplines of Health Professions at the Faculty of Health Sciences: Medical Audiology Sciences, Medical Imaging Sciences, or Medical Laboratory Sciences.

Graduate Academic Achievement Award: It is a non-cash honorary award in recognition of excellence in academic performance that is awarded to a student in the MS programs.

The Dr. Musa Najib Nimah Endowed Award: Awarded to a graduating student at the graduate level from the Faculty of Health Sciences who exhibits the "spirit" of public health and demonstrates excellent leadership skills and social involvement.

Dr. Nadim Adib Haddad Endowed Award: Awarded to a graduate student in the MPH program who has the highest GPA.

The Raghda Kurdi Exceptional Leader Award: Awarded to a senior female student pursuing her undergraduate studies at the Faculty of Health Sciences, who has demonstrated a record of academic excellence and leadership skills, and is on financial aid.

Lina Jazi Environmental Excellence Award: To be awarded to a graduating student who has demonstrated excellence through either a project, presentation, research, and or volunteer efforts in the area of environmental sciences in the Faculty of Health Sciences.

Faculty of Medicine

Franklin Thomas Moore — Ethel Jessup Memorial Prize: Established by the children and friends of Dr. and Mrs. Franklin T. Moore; awarded to the senior medical student who has shown the highest proficiency in obstetrics and gynecology or, lacking such, in any department, and in the student's personal life a dedication to humanity, a zeal for truth, and a belief in God.

Nimr Tuqan Memorial Prize in Pathology: It is in memory of the late Dr. Nimr Tuqan and is to be awarded to the student of Medicine II who excels in her/his work in the Department of Pathology.

Hatem and Fuadi Moukaddem Award in Medicine: Awarded to a graduating student majoring in Medicine with top academic achievement and demonstrated dedication to the profession.

Professor Ziad Salem Endowed Award: Awarded to a fellow training in oncology.

Dr. Majid-Uddin Kazi Excellence Award in Medicine: Awarded to graduating student majoring in Medicine with top academic achievement and demonstrated dedication to the profession.

Henry and Amelia Nasrallah Endowed Teaching Award: Awarded to a resident or fellow in the Department of Psychiatry who exhibits a track record of excellent teaching and mentoring skills.

Dr. M. Amin Arnaout Award in Medicine: Awarded to a student majoring in medicine graduating with High Distinction or Distinction and has demonstrated integrity, diligence, and dedication to the academic profession.

Rafic Hariri School of Nursing

Florence Nightingale Award: Awarded to an undergraduate senior student who meets the following criteria: academic achievement, professional integrity, contribution to professional and university life.

Women's Auxiliary Awards: Awarded to senior students who meet the following criteria: academic achievement, professional integrity and seriousness of purpose, contribution to professional and university life,. willingness to join AUBMC after graduation.

Janet Jeries Haddadin Nursing Award: Awarded to an undergraduate student with the highest GPA.

Rouzan Al-Najjar Memorial Award in Nursing: Awarded to 3 Arab students, one in each year of the nursing program, who are the most academically qualified.

Salma Mansur Jurdak Excellence Award in Nursing: Awarded to a graduating student majoring in Nursing at the Rafic Hariri School of Nursing with top academic achievement and demonstrated dedication to the profession.

Suliman S. Olayan School of Business

Dr. Emile Ghattas Memorial Award: Awarded to the best graduating student in the Bachelor of Business Administration program.

Aida Sanioura Memorial Prize in Business: Awarded to a top graduate senior from the Suliman S. Olayan School of Business.

Ali Abdelbasset Sanioura Memorial Prize: Awarded to a senior graduating student studying Business Administration, in good academic standing with team spirit commitment.

Quantum Communications Award in Business: Awarded to one or more graduating students in Business with the highest academic achievements.

Imad and Annelie Baalbaki Award in Marketing: Conferred on a graduating student in Business Administration with track concentration in Marketing and who demonstrates excellence in his/her academic studies.

Mohamad Ali Safieddine Endowed Award for Entrepreneurship: Awarded to a graduating student who is receiving financial assistance and who demonstrates a strong potential or path towards entrepreneurship and business ownership.

Gravitas Consultants' HRM Leadership Award: This award is in recognition of leadership in the field of HRM through active engagement in promoting a positive perception of HR.

Nada T. Kobeissi Endowed Excellence Award in Management: Awarded to the top graduating student majoring in Management at AUB's Suliman S. Olayan School of Business. The student should be recipient of financial assistance from the university, and should have the highest GPA as she/he graduates majoring in Management.

Roosevelt and Georgette Fattouh Excellence Award in Business: Awarded to a graduating student majoring in Business with top Academic achievement.

Sami Kteily Excellence Award for Graduate Students: Awarded to a graduating graduate student with top academic achievement.

Endowed Research Funds

- Dar Al-Handasah (Shair and Partners) Endowed Fund for Research in Engineering

- Farouk K. Jabre Fund for Biomedical Research
- The Hani Salaam Research Fund (CAMES)
- Henry and Amelia Nasrallah Endowed Research Award
- The Joseph and Ilham Cicippio Endowed Research Fund at FAFS
- Kamal A. Shair Central Research Science Laboratory
- Khaled Y. Daouk Research Fund
- Mikati Endowed Research Fund (CSR)
- Professor Fawwaz Ulaby MSFEA Endowed Research Fund
- Rockefeller Foundation Graduate Education and Research
- Salim A. Salam Endowed Fund
- Suheil Jamil Muasher Endowed Medical Student Research Award

Faculty List

Deans Emeriti

- Bitar, Khalil; PhD, Yale University; Emeritus Dean; Faculty of Arts and Sciences - Dean's Office
- Cortas, Nadim; MD, American University of Beirut; Emeritus Dean; Faculty of Medicine - Dean's Office, Internal Medicine, Endocrinology and Metabolism, Pharmacology and Toxicology
- Daghir, Nuhad; PhD, Iowa State University; Emeritus Dean; Faculty of Agricultural and Food Sciences - Dean's Office, Poultry Science

Professors Emeriti

- Bashour, Munir; PhD, University of Chicago; Emeritus Professor; Education
- Berbari, Adel; MD, American University of Beirut; Emeritus Professor; Internal Medicine
- Bikhazi, Anwar; PhD, University of Michigan - Dearborn; Emeritus Professor; Anatomy, Cell Biology, and Physiology
- Crow, Ralph; PhD, University of Michigan - Dearborn; Emeritus Professor; Faculty of Arts and Sciences - Dean's Office
- Dajani, Nabil; PhD, University of Iowa; Emeritus Professor; Sociology, Anthropology and Media Studies
- Issa, Philip J.; MD, USJ - Faculte Francaise De Medicine; Emeritus Professor; Radiation Oncology
- Kawar, Nasri; PhD, Pennsylvania State University; Emeritus Professor; Agriculture
- Kazarian, Shahe; PhD, University of Western Ontario; Emeritus Professor; Psychology
- Khairallah, Assaad; PhD, Princeton University; Emeritus Professor; Arabic
- Khalaf, Samir; PhD, Princeton University; Emeritus Professor; Faculty of Arts and Sciences - Dean's Office
- Khalidi, Tarif; PhD, University of Chicago; Emeritus Professor; Faculty of Arts and Sciences - Dean's Office
- Khalil, Ismail; MD, American University of Beirut; PhD, New York University; Emeritus Professor; Surgery, Vascular Surgery
- Makdisi, Samir; PhD, Columbia University; Emeritus Professor; Economics
- Mavromatis, Harry A.; PhD, Princeton University; Emeritus Professor; Physics
- Muallem, Musa; MD, American University of Beirut; Emeritus Professor; Anesthesiology
- Muwafi, Amin; PhD, University of Florida; Emeritus Professor; Mathematics

- Najjar, Samir; MD, American University of Beirut; Emeritus Professor; Pediatrics and Adolescent Medicine
- Sabah, Nassir Hussni; PhD, State University of New York; Emeritus Professor; Electrical and Computer Engineering
- Sakkal, Fateh; PhD, University of Mancheste; Emeritus Professor; Mechanical Engineering
- Seeden, Helga; PhD, University of London; Emeritus Professor; History and Archaeology
- Seikaly, Samir; PhD, University of London; Emeritus Professor; History and Archaeology
- Simaan, Joseph; MD, American University of Beirut; Emeritus Professor; Faculty of Medicine - Dean's Office
- Zurayk, Huda; PhD, Johns Hopkins University; Emeritus Professor; Epidemiology and Population Health, Biostatistics

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- Abbas, Ossama; MD, American University of Beirut; Professor of Clinical Specialty; Dermatology
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- Abboud, Diana; MD; Clinical Associate; Internal Medicine
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- Bizri, Rana; PhD, University College Dublin; Lecturer; Critical Humanities for the Liberal Arts (CHLA)

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