AMERICAN UNIVERSITY OF BEIRUT
MAROUN SEMAAN FACULTY OF ENGINEERING AND ARCHITECTURE
DEPARTMENT OF INDUSTRIAL ENGINEERING & MANAGEMENT

INDE 301: ENGINEERING ECONOMY
FALL 2022-2023

COURSE SYLLABUS

I. Meeting Time, Location, and Website:

Lecture: T/Th
Location: Bechtel Engineering Building
Website: Moodle

II. Instructor:

Dr. Nabil Nehme
Office: Bechtel Engineering Building – Room 409
E-Mail: nn58@aub.edu.lb
Office Hours: Tuesday: 10 am.-11 am; 2:00 pm – 4:00 pm or by appointment

III. Description:

This course deals with the economic evaluation of alternatives that arise during the design and operation of engineering and business systems. The objective is to choose a "good" alternative based on a sound scientific (economic) criterion. The course will introduce the students to the concepts of time value of money, present and annual worth analysis, rate of return, effect of taxes, inflation, and decision making under uncertainty, among others. Upon completion of this course, the student will be able to perform basic (but insightful) economic feasibility analysis of engineering and business projects.

IV. Course Objectives:

1. Understand the basic concepts of engineering economy
2. Perform economic calculations for interest and payment for multiple periods
3. Able to perform financial evaluation using Payback Period, Net Present Worth and Capital Equivalence analysis
4. Able to perform financial evaluation using Annual Equivalent Worth
5. Able to perform financial evaluation using Rate of Return method
6. Understand the concept of inflation and its impact on cash flows

V. Summary of Topical Coverage (Tentative):

- Week 1: Foundations of Engineering Economy (Chapter 1).
- Week 2: Factors: How Time and Interest Affect Money (Chapter 2).
- Week 3: Combining Factors and Interest Rates (Chapters 3-4).
- Week 4: Present and Annual Worth Analysis (Chapters 5-6).
- Week 5: Present and Annual Worth Analysis (Chapters 5-6).
- Week 6: Bonds and Rate of Return Analysis: Single Alternative (Chapters 7-8).
- Week 7: Rate of Return Analysis: Multiple Alternatives (Chapters 7-8).
- **Midterm: TBA**
- Week 8: Benefit/Cost Analysis and Public Sector Economics (Chapter 9).
- Week 9: Introduction to Accounting and MARR Setting (Chapter 10)[1].
- Week 10: Replacement and Retention Decisions (Chapter 11).
- Week 11: Selection from Independent Projects under Budget Limitation (Chapter 12)*.
- Week 12: Effects of Inflation (Chapter 14)*
- Week 13: Depreciation and After-Tax Economic Analysis (Chapters 16-17)*.
- Week 14: Formalized Sensitivity Analysis and Expected Value Decisions (Chapter 18)*.
- Week 15: **Final Exam**

VI. Instructional Methodology:

Lecture, class discussion, assignments, quizzes

VII. Textbooks:

Blank, L. and A. Tarquin (2012). Engineering Economy, 7th Edition, McGraw-Hill, Inc.

VIII. Additional References:

1. Clemen, R. T. (2000). *Making Hard Decisions* , Duxbury.
2. Fabrycky, W. J., G. J. Thuesen, and D. Verma (1998). *Economic Decision Analysis*, Prentice-Hall.
3. Luenberger, D. G. (1998). *Investment Science*, Oxford University Press.
4. Sullivan,W. G., E. Wicks and J. Luxhoj (2003). *Engineering Economy*, Prentice-Hall.

IX. Performance Evaluation and Grading:

Midterm (Tuesday 25th October 2022 at 6:30 pm)	40 %
Final Exam (Comprehensive)	40 %
Assignments/Attendance	20 %

[1] * Topic will be covered in compact manner.

X. Other Course Policies:

Homework

Homework problems will be assigned and graded frequently. Students are encouraged to spend plenty of time working on the homework problems and to discuss their solution with each other and the instructor. However, *each student should write and submit the homework individually*. *Do not* type the homework. But do *staple it*. *Doing the homework is the best way to excel in this course*.

Attendance Policy and Class Management

Students are personally responsible and accountable for learning the content of any class they miss. Students missing more than 20% of sessions before the last day for withdrawal may be dropped from the course without notice. No student will be admitted to class after 10 minutes from the beginning of the lecture**.** A student can miss no more than **4** sessions of instruction. By the **5th** session, the instructor may ask the student to drop the course.

Cells phones and other gadgets are not allowed in class.

Due Dates

Due dates will be strictly enforced. No homework is allowed to be presented after the due date.

Email

Information concerning the course may be sent by the instructor to students by email or through Moodle. Students are responsible for keeping AUB email accounts functioning properly.

XI. Others:

- Students are expected to complete all work with the highest standard of integrity in line with AUB's Student Code of Conduct and MSFEA's Honor Code. Plagiarism, forgery, cheating or any form of academic misconduct will not be tolerated. Any of the above may cause a student's final course grade to be lowered significantly or the student may receive a failing grade, depending on the severity of the offence. Plagiarism is the presentation of the work of another as one's own work.
- All students must take exams as scheduled. Failure to take an exam during the assigned period will result in a grade of zero on that test unless the student has personally contacted me personally and received permission from me to be absent from the test.
- Any student whose name appears on the class list and stops attending classes and exams without officially withdrawing from the course will receive a failing grade "F".
- Any student caught cheating on an exam, whether copying someone else's work or helping someone to copy their work, will receive an F grade.