**American University of Beirut**

**Faculty of Medicine**

**Department of Biochemistry & Molecular Genetics**

**Course Syllabus: BIOC 246 – Biochemistry for Nursing**

**Semester: Fall**

**Course Director and lecturer**

**Name**  : **JULNAR USTA ; PhD**

Academic Title : Professor and **Course Coordinator**

Department : Biochemistry & Molecular Genetics

Office Hours : To Be Announced or by appointment

Office Location : DTS , 4th floor , Room 434-b

Extension Number : 4874

E-mail : [justa@aub.edu.lb](mailto:justa@aub.edu.lb)

**Course lecturer**

**Name**  : **NADINE DARWICHE; PhD**

Academic Title : Professor

Department : Biochemistry & Molecular Genetics

Office Hours : To Be Announced or by appointment

Office Location : DTS, 4th floor, Room 419-e

Extension Number : 4803

E-mail : [nd03@aub.edu.lb](mailto:nd03@aub.edu.lb)

**Course Details**

Course Number : BIOC 246

Course Title : Biochemistry for Nursing

Number of Credits : 4 credits

Course Venue : DTS building; Med-1 Room, Floor B

Course Scheduled on :Tuesdays (2-2:50/3-3:50pm); Thursdays (2-2:50pm) and

Fridays (10-11am)

**Teaching Assistant**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Rank** | **Department** | **E-mail** |
|  |  |  |  |

**I. Course Description**

**Biochemistry for Nursing is a 4 credit hours course (BIOC 246)**

**The course is offered during the first semester (fall semester) of the academic year. It is tailored and designed for B.S. Nursing students combining general, organic and biological chemistry.**

**Biochemistry is integral to nursing education. It provides nursing students with knowledge to understand & manage biochemical aspects of health and disease. The course will equip students with education that fosters critical thinking, and problem solving skills that are essential for nursing practice.**

**II. Course Learning Objectives /Outcomes**

**Course objectives are to:**

1. Provide nursing students with knowledge for effective clinical practice & patient care.
2. Introduce students to basic concepts in chemistry, organic and Biochemistry. It emphasizes the main biochemical pathways in the cell and defines the interrelations between the different metabolic pathways.
3. Unify students’ background needed for comprehending related fields such as physiology, microbiology, pharmacology, clinical biochemistry, and nutrition. The course is composed of 3 units: General Chemistry, Organic Chemistry and Biochemistry.

**Upon completion of the course, students must:**

1. Know general and basic concepts in chemistry such as reactivity of atoms, pH, and electrostatic /hydrophobic interactions all are important in understanding later protein structure and function.

2. Be able to identify the functional groups in a molecule and predict their reactivity.

1. Know the fate of the various cellular bio-molecules; in addition, he/she should be able to highlight their metabolic pathway.
2. Clinically correlate a disease to a biochemical defect in which a block in a specific pathway occurs.

**III. Course Recourses/References**

Students are responsible for information provided on MOODLE as: uploaded handouts, power point presentations, explanation documents, home-works, assignments and lectures in addition to any information brought up or discussed during the class lectures.

**IV. Grading Criteria**

|  |  |
| --- | --- |
| **Learning Assessment Tool(s)** | **Percentage** |
| Exam-1 | 15% |
| Exam-2 | 15% |
| Exam-3 | 15% |
| Exam-4 | 15 % |
| Assignments | 10% |
| Attendance & Participation | 5% |
| Final Exam | 20% |
| Drop Quizzes | 5% |

**V. Course Policies**

* Attendance is Mandatory. Students are requested to attend all lectures and sessions. Students may be excused if he/she is absent for a valid reason that include illness or family emergency. The course director must be informed ahead of time. it is the student responsibility to obtain the excused absence in timely manner. Absent students must make up for the missed activity at the discretion of the course director.
* Late submission of assignment will not be tolerated, hence **NO grades will be granted**
* Professionalism: Students are expected to attend classes, To Listen to questions and actively participate in the ongoing discussion. Students must demonstrate a collegial attitude and behave in a polite and respectful manner with peers and faculty.

* **NO** talking, **NO** cellphones, **NO** eating or drinking are allowed during lectures or sessions.
* **NO** student will be allowed to withdraw beyond the time set by the registrar’s office
* MAKE UP for Missed Exams will be Subjective and will be held AFTER the final exam
* **Friday - Exam I (lectures 1-11)**
* **Friday - Exam II (lectures 12-22)**
* **Friday - Exam III (lectures 23-32)**
* **Friday - Exam IV (lectures 33-42)**
* **FINAL EXAM - TBA**
* **Exam location will be announced**
* **The Director has the right to modify the schedule & topics as deemed necessary.**

**VI. University Rules and Regulations** *(Add Updated Policies and Links)*

**Academic Integrity**

The heart of the academic profession is integrity. Any violation of academic integrity (cheating, plagiarism, dishonesty) will not be tolerated and will result in serious repercussions. Kindly refer to AUB Policies and Procedures on academic integrity:

<http://pnp.aub.edu.lb/university/handbook/15801004.html>

**Learning Needs of Students with Disabilities:**

AUB strives to make learning experiences accessible for all. If you have documented special needs and anticipate difficulties with the content or format of the course due to physical, or learning disability, you have to inform the Accessible Education Office. In order for you to receive the support needed and to facilitate the smooth accommodation process you must register with the Accessible Education office : [accessibility@aub.edu.lb](mailto:accessibility@aub.edu.lb); extension 3246, West Hall 314

**Non-Discrimination and Anti-Discriminatory harassment including sexual Harassment at AUB.**

If you think you have experienced discrimination, discriminatory harassment, or sexual harassment, we encourage you to inform the equity /Title IX coordinator. Mitra Tauk at 01-350000, extension 2514, [titleix@aub.edu.lb](mailto:titleix@aub.edu.lb), report to a Title IX deputy at your faculty or at any other faculty ([www.aub.edu.lb/titleix](http://www.aub.edu.lb/titleix)) or report on line ([www.aub.ethicspoint.com](http://www.aub.ethicspoint.com)) . Reports must be submitted anonymously or not. Please know that the university will maintain the confidentiality of the complaint and privacy of the persons involved to the greatest extent possible, consistent with its goal of conducting a thorough and complete investigation and to the extent permitted by law.

**Course Outline**

|  |  |  |
| --- | --- | --- |
| **Lecture** | **Topic** | **Lecturer** |
| **1** | Introduction | JU |
| **2** | Atoms & Molecules | JU |
| **3** | Periodic Properties | JU |
| **4** | Chemical Bonds | JU |
|  |  |  |
| **5** | Oxidation Reduction | JU |
| **6** | Solutions: Concentration | JU |
| **7** | Molarity | JU |
| **8** | Acidity, Basicity | JU |
|  |  |  |
| **9** | Biological Buffers | JU |
| **10** | Problem Solving | JU |
| **11** | Problem Solving | JU |
| **12** | Organic Compounds: Classification | JU |
|  |  |  |
| **13** | Naming of organic compounds | JU |
| **14** | General Organic Reactions | JU |
| **15** | Alcohols | JU |
| **16** | Aldehydes | JU |
|  | EXAM – 1 (Lec 1-11) |  |
| **17** | ketones | JU |
| **18** | Carboxylic acids | JU |
| **19** | Organic Amines | JU |
| **20** | Organic acid derivatives | JU |
|  |  |  |
| **21** | Problem Solving | JU |
| **22** | Problem Solving | JU |
| **23** | **Introduction to Biochemistry** | JU |
| **24** | Amino acids | JU |
|  |  |  |
| **25** | Amino acids | JU |
| **26** | Peptide bond, Protein Primary structure | JU |
| **27** | Proteins Secondary & Tertiary Structures & Quaternary | JU |
| **28** | Proteins Inactivation Vs Denaturation | JU |
|  | EXAM – 2 (Lec 12-22) |  |
| **29** | Enzymes Classes and Properties | JU |
| **30** | Enzyme Catalysis | JU |
| **31** | Enzyme Kinetics + Inhibition | JU |
| **32** | Enzyme Regulation | JU |
|  |  |  |
| **33** | Introduction to Metabolism | ND |
| **34** | Carbohydrates | ND |
| **35** | Glycolysis | ND |
| **36** | TCA | ND |
|  |  |  |
| **37** | Tri-Carboxylic Acid Cycle | ND |
| **38** | Electron Transport Chain | ND |
| **39** | Glycogen Metabolism | ND |
| **40** | Gluconeogenesis | ND |
|  | EXAM – 3 (Lec 23-32) |  |
| **41** | Hexose Monophosphate Shunt | ND |
| **42** | Regulation of Carbohydrate Metabolism | JU |
| **43** | Lipids- Classes | JU |
| **44** | Fatty acid Oxidation | JU |
|  |  |  |
| **45** | Fatty acid Oxidation | JU |
| **46** | Ketone Bodies | JU |
| **47** | Fatty acid synthesis | JU |
| **48** | Amino Acid Metabolism- General | JU |
|  | EXAM – 4 (Lec 33-42) |  |
| **49** | Urea Cycle | JU |
| **50** | Amino Acid Catabolism | JU |
| **51** | Amino Acid Catabolism | JU |
| **52** | Amino Acid Disorders | JU |
|  |  |  |
| **53** | DNA/RNA | ND |
| **54** | DNA Replication | ND |
| **55** | Transcription and Translation | ND |
| **56** | Integration of Metabolism | JU |
|  | Final EXAM ……..To Be Announced |  |

**VIII. Table of Assignments**

**Students will be informed about the Assignments when uploaded on the Moodle course**

**Students are kindly requested to submit a hard copy of the answers to the various assignments as directed by the course instructor.**

**Late submission will be corrected but no grades will be granted**