

Department of Biology and Biochemistry

Nutritional Biochemistry

BIOC231

**Course Outline (Syllabus)**

**Semester**: Fall 2021/2022

**Course Instructor**: Dr. Wasif Al-Shareef

**Lecture times:**

|  |  |  |
| --- | --- | --- |
| Day | Tuesday | Wednesday |
| Time | 08:30-10:00 | 08:30-10:00 |

**Office Hours:**

|  |  |  |
| --- | --- | --- |
| Day | Tuesday | Wednesday |
| Time | 10:00-11:00 | 10:00-11:00 |

**Course Description:**

This course is a comprehensive survey of the structure and function of macromolecules: carbohydrates, proteins, lipids and nucleic acids. Enzyme kinetics and the kinetics of oxygen-binding proteins are also discussed. To understand the biological processes, you need a strong background in chemistry, biology, and organic chemistry.

**Text Book**

1. Principles of Biochemistry: (6th edition, by Lehninger, Nelson, Cox; 2016).
2. Nutritional Biochemistry: (1st edition, by D.C. Sharma / Devanshi Sharma, 2015).

**Evaluation:**

First Hour Exam: 25%

Second Hour Exam: 25%

Participation (assignment): 10%

Final Exam: 40%

**Rules and Regulations:**

Students must strictly adhere to Berzeit University rules and regulation regarding lectures and exams attendance, plagiarism, and dishonesty.

**Topics to be covered**

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| --- | --- |
| Week # | Topics to be covered |
| 1 | Introduction: The foundations of biochemistry (cellular, chemical, physical, and genetic). |
| 3 | Chemistry of Amino Acids and Proteins |
| 4 | Chemistry of Carbohydrates |
| 5 | Enzymes |
| 6 | Chemistry of Lipids |
| 7 | Vitamins and Minerals |
| 8 | Carbohydrate Metabolism - Glycolysis, Citric Acid  Cycle, Pentose Phosphate Pathway, Gluconeogenesis,  Glycogenolysis |
| 10 | Lipids Metabolism - Beta Oxidation, Fatty Acid  Synthesis, Cholesterol |
| 11 | Amino Acid Metabolism - Urea cycle, Glucogenic and  Ketogenic amino acids |
| 12 | Biological Oxidation (the Electron Transport Chain) |
| 13 | Hormonal regulation of fuel metabolism |