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| --- | --- | --- |
|  | **Mutah University**  **Detailed Syllabus Form** | Description: C:\Users\lamasat.lamasat-PC\Pictures\Picture1.png |

**First :** Course Information**:**

|  |  |
| --- | --- |
| * Course Number: 0308222 | * Course Title: Biochemistry |
| * Credit Hours: 3 | * College: Science |
| * Pre-requisite Organic chemistry | * Department: medical laboratory science |
| * Instructor: Dr. Ahmad Al-Jaafreh | * Semester & Academic Year: |
| * the time of the lecture: | * Office Hours: |

**Second :** General Course Description

This course deals with of biomolecules, such as amino acids, proteins, carbohydrates, lipids, and nucleic acids. The focus of this course will be on the relationship between protein structure and its biological function, generation and storage of metabolic energy, main metabolic pathways and their key steps. In addition.

**Third :** Course Objectives

1. Introduce and learn certain advanced techniques to determine the concentration in biological fluids
2. learn the major pathways for bio-molecules, calculate the amount of energy yield and the main enzymes regulate these processes.
3. Learn about the specialty areas of biochemistry (structural, classification, and function).

**Fourth:** Expected Learning Outcomes

1. Be able to define the major concepts in the subjects in the course.
2. Be able to state the broad categories of bio-molecules, and have detailed knowledge of examples of each.
3. be able to identify the classification for bio-molecules, presence in biological systems and major functions for them.

**Fifth :** Course Plan Distribution & Learning Resources

|  |  |  |
| --- | --- | --- |
| **Learning Resources** | **Topics to be Covered** | **Week**  **No.** |
| **Textbooks (print and digital)** | **Introduction**  -**introduction to the chemistry of life**  **- Chemical properties of water**   * **PH, and buffer system** * \*definitions: acid, base, And buffer * \*acid–base balance * \*Maintenance of H+   \*Buffer Systems: Regulation of H+ |  |
| **Textbooks (print and digital)** | **Proteins**   * **Protein properties** * **Primary structure (sequencing, polypeptide diversity)** * **Secondary structure** * **Tertiary structure** * **Quaternary and symmetry** * **Protein stability and folding** * **functional Protein :**   **- myoglobin and hemoglobin and antibodies** |  |
| **Textbooks (print and digital)** | **Carbohydrayes**   * **Monosaccharides Aldose and Ketose** * **Disaccharides** * **Polysaccharides** * **glycoproteins** |  |
| **Textbooks (print and digital)** | **Lipid and biological membrane**   * **Properties of fats and oils** * **Lipid classification** * **Fatty acid reactions** * **Glycolipid and Lipid-linked proteins** |  |
| **Textbooks (print and digital)** | **Enzymes**   * **General properties of the enzymes** * **Activation energy and the reaction coordinate**   **- metals ion cofactors act as catalysts**  **- catalytic mechanism** |  |

**Sixth :** Teaching Strategies and Methods

|  |  |
| --- | --- |
| **Teaching Strategies and Methods** | No |
| **Lectures: Students are expected to take notes, records, or absorb information.** | **1** |
| **Demonstration: Lectures will includes multimedia presentations, activities, and demonstrations** | **2** |
| **The following Teaching methods will be used in class room:**   1. **Lectures** 2. **Question and Answer** 3. **Discussions** 4. **Multimedia** | **3** |

**Seventh :** Methods of Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| **Proportion of Final Evaluation** | **Evaluation Methods of** | **Week & Date** | **No.** |
| **25%** | **First Exam** | **Sixth Week** | **1.** |
| **25%** | **Second Exam** | **Eleventh Week** | **2.** |
| **50%** | **Final Exam** | **Fifteenth Week** | **3.** |
| **(100%)** |  | **Total** | |

**Eighth :** Required Textbooks

**- Primary Textbook:**

1. Thomas M. Devlin, Textbook of Biochemistry with Clinical Correlations, (2010) 7th Edition.
2. Donald Voet *et al*., FUNDAMENTALS OF BIOCHEMISTRY LIFE AT THE MOLECULAR LEVEL, (2008) 3rd Edition.

**-** **Secondary References**

**Ninth :** General Instructions

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| --- | --- |
| **Additional Notes, Office hours, Incomplete Exams, Reports, Papers, …etc** | **No** |
| **Office Hours:** | **1** |
| **Incomplete Exam:** | **2** |
| **Students might be required to present a seminar in one specific biotechnological application in enzyme technology / plant biotechnology / animal biotechnology or environmental biotechnology.** | **3** |
| **The students allowed to be absent (with or without solid reason) up to 4 classes (1 hour class).** | **4** |