

**Department of: Food technology department**

**College of: AGRICULTURE**

**University of: SALAHADDIN-ERBIL**

**Subject: BIOCHEMISTRY**

**Course Book: 3rd *YEAR STUDENT***

**Lecturer's name: Dr Sazan Mumtaz Haidary**

**Academic Year: 2021/2022**

 **Course Book**/ **1st semester:3rdStage**

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| **1. Course name** | **Biochemistry** |
| **2. Lecturer in charge** | **Dr. Sazan Mumtaz haidary** |
| **3. Department/ College** | **Food technoloy/AGRICULTURE** |
| **4. Contact** | **e-mail: sazanhaidary @yahoo.om****0704484547** |
| **5. Time (in hours) per week**  | **Theory: 2** **Practical: 6**  |
| **6. Office hours** |  **THERSUDAY, WEDNESDAY ( 9.0 am to 1.0 pm)**  |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **Dr. Sazan Mumtaz haidary** |
| **9. Keywords** |  |

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| ‌Course overview: mention the importance and needs of this course in two or three paragraphs. |
| Biochemistry topics were selected to cover of both biochemistry ,Physiological chemistry and industrial application of macromolecule and enzymes .The objective s of biochemistry lectures are:1.to present a clear and precise discussion of the structure of macro molecules.2.To relate biochemical events at the cellular level to Physiological processin the whole animal and humans.3.application of enzymes and macro molecules in food technology. |
|  Course Objectives: identify in two or three paragraphs the important objectives of the course and show those points that students should learn at the end of the course. |
| 1. present aclear and precise discussion of the structure of the biochemistry (structure of macro molecules ,carbohydrate ,lipid ,protein ,nucleic acids, ----etc.) 2.Enzyme:classification,mechanism,activites,co-enzyme,cofactors,kinetics,inhibitors,regulation of enzyme a ctivites ,allostric enzymes.3.Metabolich bath ways and their control .A .carbohydrate metabolismB. Lipid metabolism3.Protien metabolism |
|  Course Reading List and References‌ |
| Main references | Useful references | Magazines and review (Internet) |
| 1. Text book of biochemistry(2006)sixth edition,Thomas M .Devlin
 | 1. Fundemental of biochemistry J.L.JAIN(2002) | 1.  |
| 2. Text book of biochemistry(2002)T.N.Ppattabiraman | 2. | 2. |
| 3. biochemistry(2005)Stryer | 3. | 3. |
| Subjects: Biochemistry |
| lecturer’s name Firdaws . A .Mashhadane |
| Contacts | Tel/ | Email:foodtech.q-a @yahoo.com |
| Subject objective: to present a clear and precise discussion of the structure of macro molecules.2.To relate biochemical events at the cellular level to Physiological processing the whole animal and humans.3.application of enzymes and macro molecules in food technology. ‌ |
| Scientific content of the subject: . present a clear and precise discussion of the structure of the biochemistry (structure of macro molecules ,carbohydrate ,lipid ,protein ,nucleic acids, ----etc.) .2.Enzyme:classification,mechanism,activites,co-enzyme,co-factors,kinetics,inhibitors,regulation of enzyme activites, allostric enzymes.3.Metabolich bath ways and their control.A. carbohydrate metabolismB. Lipid metabolism3.Protien metabolism |
| Subject references:‌1. Text book of biochemistry(2006)sixth edition ,Thomas M .Devlin
2. Text book of biochemistry(2002)T.N.P pattabiraman
3. biochemistry(2005) Stryer.

**Syllabus** |

 **Protein and Amino acid**

 1- A-Nomenclature and classification of Amino acid

 B-Essential amino acid

 2- A-The peptide bond and the chemical structure of protein

 B-Cellular function of protein

3- A-Denaturation of protein

 B-Amphoteric nature of protein and amino acids

4- Charge properties , ion binding capacity and solubility

5- Chemical properties

6**- Month Examination.**

7-Enzymes

 Enzyme Strcture,classification and enzyme action.

8- Co-enzym e,Kinetic studies of enzyme.

9- Inhibitors,Type of inhibitors

10- **Metabolism.**

Glycolysis,control of glycolysis.

11-Krebs cycle and their control enzymes

12-β-Oxidation of fatty acids,α-oxidation of fatty acids.

13-**Second examination**,Cholesterol and their metabolic path ways

Q1 .

 Explain the α-helix and β-pleated secondary structure of protein with example

 Q2

 **Define the following:**

(Essential Amino acid

Q3

**:** Explain feed back inhibition with example? What type of inhibition? Which enzyme regulates this mechanism

Q4

 Write false or true and correct the answer of the following;

1. If an enzyme is denatured ,the catalytic activity is usually reversible.
2. The primary ,secondary,tertiary and quaternary structure of protein enzyme are essential

Q5

 **Fill the following blanks:**

**1------------ process are protein precipitation by low concentration of neutral salt.**

**Q6**

A-What is the fate of glcine?

B-Explain Glycerol-p-shuttle with diagram?