



Department ofFood Technology & Field Crops

College of ...Agriculture

University ofSalahaddin

Subject: ...Biochemistry

Course Outline– *Second year 2nd semester*

Lecturer's name Assist.Prof.Dr. Safea Sabir Taha (PhD)

Academic Year: 2017/2018

Course Book

1. Course name	Biochemistry
2. Lecturer	Assist.Prof. Dr. Safea Sabir Taha
3. Department/ College	Animal resources/ Agriculture
4. Contact	e-mail: Safea.Taha@su.edu.krd Tel: (optional)
5. Time (in	Theory: 2

hours) per week	Practice : 6
6. Office hours	Availability of the lecturer to the student during the week 6
7. Course code	
8. Teacher's academic profile	<p>PROFESSIONAL EXPERIENCES</p> <p>* 1- B. Sc. In Biochemistry science – Univer.of Baghdad in 1975</p> <p>2- M. Sc. In Organic Chemistry science – Univer. of Salahhadin in 2001</p> <p>Thesis title (<i>Synthesis and Spectroscopic Studies of some Coumarin -3-Carboxylic Acid Compounds by Ultrasonic Promoted Knoevenagel Reaction</i>)</p> <p>3- Ph. D. In Petroleum Chemistry science – Univer. of Salahadin in 2007</p> <p>Thesis title (<i>Evaluation of Crude Oil and its Products of Tawke Well in Zakho-Kurdistan Region and Gasoline Octane Number Improvement by Some Additives</i>)</p> <p>Undergraduate Students</p> <p>1. Organic Chemistry 2. Biochemistry</p> <p>3. Physical Chemistry 4. Inorganic chemistry 5. Analytic chemistry</p> <p>5.Food waste management</p> <p><u>Postgraduate Students</u></p> <p>1. Food Physics 2. Food pigments 3. Biopolymer <u>Sciential degrees</u></p> <p>1- Scientific Researcher</p> <p>2- Assistant Lecturer 2003-2007</p> <p>3- Lecturer 2007-2012</p> <p>4- Assistant Professor 2012 till now</p>

Scientific and Office works

There isn't any office work

Supervised and Researches

* Published more than 5 scientific researches in several scientific Journals

* Supervised on 1 master thesis and 1 Diploma Thesis in industrial chemistry.

* Contributed as a member or supervisor for 7 examination committee for discussion master and three Ph.D. thesis.

* Supervised on more than 18 research projects at the end stage of undergraduate student.

The Conferences Contrib

1. The first international scientific conference of Cihan University – Erbil, May, 20-21, 2014.

2. The 5th international scientific conference of Eshik university – Erbil April 13-14, 2014

3. 2nd Scientific conference of Garmian university 6,7 -2015

Periods

1-Preparation period for assistant Lab., M.Sc students & M.Sc teachers chemists deals with the **chemical Safety & security** in Agriculture College for all Depts in Salahhadin Univer. 15/9/2012.

2- Preparation period for assistant Lab., M.Sc students & M.Sc teachers chemists deals with the **chemical Safety & security** in Agriculture College for all Depts in Salahhadin Univer. 15/9/2014.

Committees

1- Contributed as a member of elevation scientific degree committee in college of Agriculture depts/Univer. of Salahhadin- Hawler to determine scientific grade in no.352 at

	<p>10/11/2014.</p> <p>2- Contributed as a member of elevation scientific degree committee in college of Agriculture departs/Univer. of Salahhadin- Hawler to determine scientific grade in no.4452 at 14/12/2015. .</p> <p>3-Head of chemical consolidation committee in college of Agriculture departs./Univer. of Salahhadin-Hawler since 2013.</p> <p>4-Member of scientific committee depart. of Food Technolog/college of Agriculture/Univer. of Salahhadin-Hawler from 2009-2014.</p> <p>9. Member of Higher Education committee depart. Of Food Technolog / college of Agriculture/Univer. of Salahhadin- Hawler since 2009.</p>
<p>9. Keywords</p>	<p>This course is a natural continuation of a course in biochemistry, but the material is more focused. The basic goal is to establish a connection between different macromolecules through their functions of them inequalities and feasible region. Some topics are water & its relation with the biological molecules, carbohydrates, lipids, proteins, nucleic acid, also some knowledge about enzymes &, coenzymes.</p>
	<p>10.</p> <p>The more general objective of this course is to continue providing a deeper understanding and working knowledge of biochemistry, while in the process strengthening analytical skills increasing student's ability to communicate structures of macromolecules with their physiological functions, making them comfortable with reading and understanding their different types & subdivision of these substances & chemical structure own and continuing to develop their appreciation for abstract biochemistry.</p>
	<p>11. Course objective:</p> <p>The topics listed in the syllabus will be covered in the lectures. The students</p>

will be asked to study all topics in the lectures at home. To get the best of the course it is suggested that the students attend classes as much as possible. Lectures note, are for supporting not for submitting the reading material try as much as possible to participate in classroom preparing the assignments given in the course.

12. Student's obligation:

Students role is very crucial in this course. They need to spend some time in solving and understanding the main concepts.

13. Forms of teaching

We will use datashow & the board in this course. The board is an old fashioned method of teaching and drawing the structure of biochemical molecules, and followed in most with the interpretation of correlation between the physiological molecules of well known universities.

14. Assessment scheme

1. Two tests (2 x 3%). 2% for active participation and attendance. for 20% of the term mark the annual striving in 25% theory .
2. Final examination 60%(40% theory & 20% practice).
3. If the student couldn't secure a minimum of 50% for the term and final examination to pass the course, they are given a chance to repeat the final examination in September.

15. Student learning outcome:

The students will learn some concepts in this new field of biochemistry. It will be useful once the pursue a postgraduate degree

16. Course Reading List and References:

- Thomas M .Devlin ,Text book of biochemistry ,sixth edition (2006).
- Pattabiraman T.N.P ,Text book of biochemistry(2002)
- 3. Stryer ,biochemistry(2005).

17. The Topics:

in this section the lecturer shall write titles of all topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture

18. Practical Topics (If there is any)

In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture

19. Examinations:

The exams will be a combination of solving problems and explaining certain ideas

of the course

- Quizzes 5%.
- Examinations will be given, 20%.
- Final exam 60%.

20. Extra notes:

None

21. Peer review پیداچوونہ

Syllabus

No.of weak	Title of the Subject	Lecture's name: Assist. Prof. Dr. Safea Sabir Taha
1	Definition of Biochemistry Cells & their biological structure , physical & chemical properties of water , body water & its distribution Carbohydrates , Amonomers & polymer , types of polymer Classification of carbohydrate, monosaccharides contain a single polyhydroxy aldehyde or ketone (e.g., glucose, fructose). <ul style="list-style-type: none">• Disaccharides consist of two monosaccharide units linked together by a covalent bond (e.g., sucrose).• Oligosaccharides contain from 3 to 10 monosaccharide units (e.g., raffinose)	
2	Forms of monosaccharides: 1- L & D isomers 2- Pyranose & furanose ring 3- α & β anomers 4- Epimers 5- Deoxy sugars 6-Physical Properties of Monosaccharides	

3	<p><i>Chemical Properties of Monosaccharides</i> 1-Oxidation 2-Reduction 3-Esterification 4-Etherification 5-Methylation 6-Fermentation</p>
4	<p>Important disaccharides with their properties-Sucrose ,lactose & maltose</p>
5	<p>Polysaccharids: starch , amylose , amylopectin</p>
6	<p>Glycogen , cellulose , Lipids, Chemical Structure of lipids , classification of fats & Oil,</p>
7	<p>Reaction of fats & oil ,Complex Lipids ,Phospholipids, Glycolipids , Lipoprotein , Steroids</p>
8	<p>Hydrocarbons waxes , terpenes , Distinction between fats , waxes & terpenes</p>
9	<p>Proteins , amino acids , Structures of amino acids Physical properties of α – amino acids</p>
10	<p><u>Anomeric Carbon</u> sequence and chemical properties of amino acids Biological function of proteins and amino acid protein</p>
11	<p>Iso – electric point Levels of protein structure Di & Polypeptides , α Imino acids</p>
12	<p>Classification of proteins based on the shape of molecule , Classification of proteins based on composition & solubility.</p>
13	<p>Types of nucleic acids Coenzyme Biological function of enzymes , Structure of enzyme</p>

14	Discussion on all above subjects
15	Examination

Question examples:

Q1: Define the following:

Epimerization , Mutarotation , Simple lipids , Co-enzyme .

Q2: A. Classify carbohydrate with examples for each one.

- How can you prepare tristearin from triolein with equations.

Q3: Write the structural formula for the following :

Oleic acid , β -D-glucopyranose , L-Fructose , Glycine

Q4: What are the differences between the following :

- Cellulose & amylose. 2. Fibrous & globular protein

Q5:

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

B: Complete the following reactions :

- Glycerol tristearate + 3NaOH \rightarrow ? + ?
- Glucose + Dilute HNO₃ \rightarrow ?

Q6/ Answer by true or false then correct the false of the following;

1-. The protein part of enzyme is called apoenzyme.