Department of … General Science.

College of ……Basic Education .

University of …..Salahaddin

Subject: ……..Biochemistry.

Course Book : (3- stage)

Lecturer's name, MSc, Snowber M. Ahmed

Academic Year (2023– 2024)

Course Book

1. Course name	**Biochemistry**
2. Lecturer in charge	**Lecturer. Snowber M. Ahmed**
3. Department/ College	**General Science / Basic education collage**
4. Contact	**e-mail: snowber.ahmed@su.edu.krd** **Tel: 0754026887**
5. Time (in hours) per week	**Theory: 2** **Practical: 3**
6. Office hours	**10 hrs**
7. Course code	**6511**
8. Teacher's academic profile	In 1997 graduated from chemistry department in Education college / Salahaddin University ,in 2004 I started worked in Koya Technical Instituted as assist lecturer after qualify master's degree in Biochemistry from Baghdad University Ibn-Alhaitham college ,in 2009 I was admission to academic staff of general science department from basic education college .
9. Keywords : bimolecular , carbohydrate ,lipid ,protein ,enzyme, nucleic acid	

10. Course overview:

- Biochemistry is the study of the chemical processes of living things. we will cover the structures and functions of major biomolecules: chemical and physical properties of proteins, carbohydrates, and lipids; enzyme kinetics and mechanisms ; relationships of organ systems. At the end of the course, students will understand how the chemical and physical properties of bio molecules influence their function. Furthermore, they will be able to use this knowledge to describe how chemical changes alter the function of biological systems. The student will master new vocabulary and demonstrate an understanding of the molecular structure and function of biological molecules.

11. Course objective:

At the end of this course students should be able to:

- understand the important of biomolecules.
- Relationship between biochemistry and other science and another branches of chemistry .
- understand the basic molecular properties of 3 of the 4 classes of biological molecules (proteins, carbohydrates, and lipids….) and the subunits from which they are formed.
- explain how the structure of biological molecules dictates function and how changes in structure direct biochemical reactions.
- describe the catalytic functions of enzymes, and perform enzyme kinetics calculations.
- describe the network of chemical reactions that make up central metabolism.
- read and understand scientific literature pertaining to subject matter in biochemistry.
- apply knowledge & concepts to novel problems

12. Student's obligation

The role of students and their obligation throughout the academic year are the Attendance and completion of all tests , examinations ,and homework's.

13. Forms of teaching

- white board
- hand out
- data show

14. Assessment scheme :- there is two main exams

1- May

Theory	(15 marks)
Practical	(35 marks)
2- Final exam	(50 marks)
Total marks :	(100%)

15. Student learning outcome:

- Identify the levels of structure in carbohydrate and describe the stabilization of these structures.
- Identify the levels of structure in proteins and describe the stabilization of these structures.
- Describe the structure and mechanism of representative enzymes in biochemical pathways. Describe representative mechanisms of enzyme catalysis
- Describe the important of to the following molecular classes:
  a. Carbohydrates
  b. Fats and lipids
  c. Amino Acids
  d. Steroids

➢ Read and interpret scientific articles in biochemistry.

16. Course Reading List and References:

1- Trudy,M.,James,R.,(2003),Biochemistry the molecular basis of life (third edition).

2- J.I. Jain ,Sunjay ,J., and Nitin ,J.,(2005),Fundamentals of biochemistry ,Vol.(1)

3- Scientific webs and journals(Internet) .

4- Fundamentals of Chemistry by David E. Goldberg

17. The Topics:	Lecturer's name
➢ Introduction biochemistry , important , relationship between biochemistry and other sciences (2 hrs) ➢ Basic bio molecules in organism. (2 hrs)	Snowber M. Ahmed

➢ Carbohydrate :- definition ,classification , important . (2 hrs) ➢ Proteins :- definition , function , classification ➢ Amino acids , peptides . (4hrs) ➢ Lipids :- definition, function , Important of lipids , classification. (4hrs) ➢ Nucleic acids :- definition, function , RNA , DNA ➢ Enzymes :- definition, general properties ➢ Enzymes classification, factors effecting on enzyme activity . ➢ Hormones:- definition, function ➢ Glands and their hormones , ➢ Insulin ,adrenalin hormones	
18. Practical Topics (If there is any)	
➢ Carbohydrate tests :- 1- Molish test 2- Benedicts test 3- Barfoid test 4- Bails test 5- Sillivanofs test 6- Oxidation of galactose 7- Reaction of urea 8- Starch hydrolysis	Dr. Bakhtiar Kakel Snowber M. Ahmed (3 hrs)

➢ Protein test 1. Burit test 2. Xanthprotic test ➢ Lipid test ➢ Vitamin test	

19. Examinations:

1. Compositional:

1- Explain how carbohydrate is produced ? with equation .

2- What's difference between glycogen and cellulose .

3- **Enumerate the factors affecting on enzyme activity .**

4- **Explain the important of thyroid gland .**

5- **-Compare between RNA and DNA structure .**

6- **– Enumerate the type of lipoprotein in blood .**

2-True or false type of exams:

Q/Correct the following sentences

1- An example of protein with no quaternary (4^0) structure is DNA .

2- Conjugated protein contains only amino acids.

3- Oils are esters of fatty acids with higher molecular weight of alcohol.

3. Multiple choices:

Q/Choose the best answer for each of the following:-

1-The structure unit of living systems is ----------

a-microorganism b-cell c- biomolecules d- carbohydrate

2--Galactose is a---------- sugar.

a-aldopentose b- ketotetrose c-aldohexose d- ketohexose

3-In sphingo phospholipids the alchol is ---------.

a-glycerol b- sphingomyelin c- sphingosine d- isoprenoids

21. Peer review

پێداچوونەوەی هاوەڵ

.