



Course Specification

— (Bachelor)

Course Title: Biochemistry

Course Code: BIOC 221

Program: Biology

Department: Biology

College: Sciences

Institution: Majmaah university

Version: 3

Last Revision Date: 26/12/2023



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	5
D. Students Assessment Activities	6
E. Learning Resources and Facilities	6
F. Assessment of Course Quality	7
G. Specification Approval	7



A. General information about the course:

1. Course Identification

1. Credit hours: 3(2+1)

Equivalent to ECTS Credit Point: 4.5

2. Course type

- A. University College Department Track Others
- B. Required Elective

3. Level/year at which this course is offered: (4th second year)

4. Course general Description:

The course deals with the chemical composition, properties, and biological functions of biochemical molecules. These include carbohydrates, proteins, lipids, enzymes, vitamins, and various hormones. The practical part involves the use of qualitative and quantitative methods for the detection, identification and assays of these molecules

5. Pre-requirements for this course (if any):

Organic chemistry CHM 211

6. Pre-requirements for this course (if any):

NA

7. Course Main Objective(s):

By the end of this course the student will be able to:

- i. Know the chemistry of carbohydrates, their classifications, biological functions, nomenclature, and the important reactions of carbohydrates.
 - ii. Know the chemistry of amino acids and proteins, their biological functions, classifications, reactions of amino acids.
 - iii. Describe enzymes, their classifications, and their role in the biological reactions
 - iv. Know the structure of nucleic acids and their biological functions.
 - v. Know the chemistry of fatty acids and lipids, their biological functions, and their classifications.
 - vi. Know the structure of vitamins, their types, their biological functions, and diseases related to vitamin deficiency.
 - vii. Know the different types of hormones and their biological role in the human body.
- Know the general outline of metabolic pathways of carbohydrates, amino acids, nucleic acids and lipids

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	83%
2	E-learning	12	17%
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	0
4.	Tutorial	
5.	Others (specify) office hours	
Total		60

Workload (based on academic semester)

No	Activity	Work load (In hours)
1.	Contact hrs	60
2.	Self –study hours or Academic learning hours (Assignments, quizzes, reports, discussions, library , research....)	60
Total Workload		120
Equivalent to ECTS Credit Pionts		4.5

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
K.1.1	Memorize the principal concepts in the Biochemistry which will help them to intake biology courses.	K2	Lecture, discussion, presentation group and	Quiz , midterm exam, final exam
K.2.1	Explain classification, structures and functions of different macromolecules	K2	Lecture, discussion, presentation group and	Quiz , midterm exam, final exam
...				





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.0	Skills			
2.1	Identify different macromolecules and communicate effectively by discussion and writing report	S1	Lecture, discussion, presentation, practical class	Final practical exam , lab report, lab assignment,
2.3	Analysis laboratory data	S4	Labs reports	Practical Exam group presentation Group research Assignment
3.0	Values, autonomy, and responsibility			
3.1	Demonstrates the leadership of the group teamwork and perform the personal responsibility for the duties and activities of the course	V1	Lecture, discussion, presentation, practical class	Homework, lab report, lab assignment
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction of bio chemistry	4
2.	Carbohydrate	6
3	Lipids and fatty acids	2
4	Amino acid and proteins	4
5	Enzymes	2
6	Nucleic acid	6
7	Vitamins and minerals	4
8	Hormones	2
9	Bioenergy and metabolism	
Total		30



D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	1 st Midterm exam Theory Unit -1,2 and 3	Week 6	10%
2.	e- learning exam Unit -3and 4	Week 8	10%
3.	2 nd Midterm exam Theory Unit -5 and 6	Week 12	10%
4	Assignment	During the semester	5%
5	Lab report	During the semester.	5%
6	Practical exam	Week 14	20%
7	Final Theory exam (Unit – 1 – ٩. The number of questions will be calculated according to the weight-age of topic/unit distribution	week 15-16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<ol style="list-style-type: none"> 1- Berg, J.M., Tymoczko, J.L. & Stryer, L. (2011). Biochemistry. Freeman, 7th edition. 2- Wilson, K. & Walker, J. (2010). Principles and Techniques of Biochemistry and Molecular Biology. Cambridge University Press, 7th edition.
Supportive References	<ol style="list-style-type: none"> 1- Science Direct - Science Direct Database. 2- Research oriented summaries of important topics in Biochemistry and molecular biology are contained in the monthly journal Trends in Biochemical Sciences (TIBS). 3- A similar journal is Bioassays. 4- Scientific American journal usually contains at least one biochemical article per issue.
Electronic Materials	CDs from various books of Chemistry whatever are available in the library
Other Learning Materials	

2. Required Facilities and equipment





Items	Resources
<p>facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	<ul style="list-style-type: none"> Assigning appropriate accommodation for conducting examination. Laboratories to be managed and equipped with advanced instruments. <p>Optically and electronically facilitated lecture rooms</p>
<p>Technology equipment (projector, smart board, software)</p>	<ul style="list-style-type: none"> Websites on the internet those are relevant to the topics of the course. <p>Latest audio- visual aids.</p>
<p>Other equipment (depending on the nature of the specialty)</p>	Chemicals

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, and department committee	Indirect by student evaluation form And Report of assessment committee in department
Effectiveness of Students assessment	Students, and department committee	Indirect by student evaluation form And Report of assessment committee in department
Quality of learning resources	Peer Reviewer	Indirect
The extent to which CLOs have been achieved	Instructor	Direct assessment sheet
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect) minute

G. Specification Approval

COUNCIL /COMMITTEE	Chemistry Department council
REFERENCE NO.	MINUTE 1
DATE	11/2/1445

