



Course Specifications

Course Title:	Biochemistry
Course Code:	2043106-3
Program:	Bachelor in Botany
Department:	Chemistry Department
College:	College of Sciences
Institution:	Taif University

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A. Course Identification

1. Credit hours: 3 hr
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 5 th Level / 2 nd year
4. Pre-requisites for this course (if any): General Chemistry 1 (204101-4)
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hr/Week	100%
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	20
3	Tutorial	-
4	Others (specify)	-
	Total	50

B. Course Objectives and Learning Outcomes

<p>1. Course Description: This course deals with studying the active constituents in plant and animal cells as well as explaining the biological importance of carbohydrates, proteins, fats, amino acids and nucleic acids for living organisms.</p>
<p>2. Course Main Objective: Recognize the active constituents in plant and animal cell, show the biological importance of sugars, proteins, fats and nucleic acids in life cell, explain the differences between the three major classes of sugars, memorize the importance of amino acids and proteins, show the classification of amino acids and proteins, explain the differences between DNA and RNA nucleic acids, show the classification of lipids and to list the different industries of oils and fats.</p>

3. Course Learning Outcomes

CLOs	Aligned PLOs

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Define the classes of active constituents in plant and animal cells.	K1
1.2	Identify routine procedures to follow up biochemical reactions.	K3
2	Skills:	
2.1	Illustrate facts and concepts across biochemical reactions in biological systems.	S2
	Identify different types and functions of carbohydrates, amino acids, proteins and lipids.	S4
3	Values:	
3.1	Take responsibility for performing tasks and achieving common goals.	V2

C. Course Content

No	List of Topics	Contact Hours
1	Section 1: Carbohydrates introduction, definition. General properties of different sugars. Chemistry and structure of monosaccharides.	3L+ 2P
2	Section 2: Chemical reactions of monosaccharides (reduction- oxidation-glycosides formation).	3L+ 2P
3	Section 3: Polysaccharides physical and chemical properties, chemical reactions.	3L+ 2P
4	Section 4: Amino acids structure, chemistry	3L+ 2P
5	Section 5: Peptides formation conformation and biological activities inside living cells	3L+ 2P
6	Section 6: Proteins structures and biological activities and bonds responsible about structure	3L+ 2P
7	Section 7: Nucleic acids and their components in single and double structure.	3L+ 2P
8	Section 8: Enzymes as biological catalysts.	3L+ 2P
9	Section 9: Lipids, different industries from oils and fats, bioenergy reactions in biological systems, phospholipids, glycolipids and steroids.	3L+ 2P
10	General Revision	3L+ 2P
Total		30L + 20P

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding:		
1.1	Define the classes of active constituents in plant and animal cells.	Lecture Cooperative learning	Paper-based exams
1.2	Identify routine procedures to follow up biochemical reactions.	Lecture Cooperative learning	Paper-based exams
2.0	Skills:		
2.1	Illustrate facts and concepts across biochemical reactions in biological	Lecture Small group activity	Practical reports Practical exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	systems.		
2.2	Identify different types and functions of carbohydrates, amino acids, proteins and lipids.	Small group activity Problem solving	Practical reports Assignments
3.0	Values:		
3.1	Take responsibility for performing tasks and achieving common goals.	Small group activity Interactive learning	Assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	5 th	20%
2	Semester Activities	Periodic	10%
3	Practical Reports	Weekly	20%
4	Final Practical Exam	11 th	10%
5	Final Exam	12 th	40%
Total			100%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

6 hours per week (as defined in the teaching schedule of the faculty member) for academic advice and consultations.

Teaching staff is also available using Blackboard web site and Taif University “Edugate” System.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- John L. Tymoczko, Jeremy M. Berg and Lubert Stryer (2011). Biochemistry: A short course, 2 nd Edition, Publication of W.H., Freeman.
Essential References Materials	- Donald Voet and Judith G. Voet (2004). Biochemistry, 4 th Edition, Wiley John Wiley Sons Inc.
Electronic Materials	Blackboard website; Website of Saudi digital Library
Other Learning Materials	Digital programs and professional software

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration)	- Classrooms for 40 students\lecture. - Laboratory for 20 students\ lab activity

Item	Resources
rooms/labs, etc.)	
Technology Resources (AV, data show, Smart Board, software, etc.)	- Data show.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Chemicals and equipment needed for biochemistry practical activities.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Peer Reviewer Students	Direct Indirect
Extent of achieving the course learning outcomes	Peer Reviewer Students	Direct Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Department
Reference No.	Committee number 14 - Academic Year 1442-1443H
Date	22\5\2022G – 21\10\1443H