



<b>Form: Course Syllabus</b>	<b>Form Number</b>	EXC-01-02-02A
	<b>Issue Number and Date</b>	2/3/24/2022/2963
	<b>Number and Date of Revision or Modification</b>	05/12/2022
	<b>Deans Council Approval Decision Number</b>	
	<b>The Date of the Deans Council Approval Decision</b>	2/3/24/2023
	<b>Number of Pages</b>	09

1.	<b>Course Title</b>	Biochemistry for Nursing
2.	<b>Course number</b>	501104
3.	<b>Credit Hours (Theory, Practical)</b>	3 credit hours (Theory)
	<b>Contact Hours (Theory, Practical)</b>	48 contact hours (Theory)
4.	<b>Prerequisites/ Corequisites</b>	General Biology – 1 (5502101)
5.	<b>Program Title</b>	B.Sc. in Nursing
6.	<b>Program Code</b>	07
7.	<b>School/ Center</b>	The School of Nursing
8.	<b>Department</b>	Physiology and Biochemistry
9.	<b>Course Level</b>	4
10.	<b>Year of Study and Semester (s)</b>	First Semester 2024-2025
11.	<b>Program Degree</b>	B.Sc.
12.	<b>Other Department(s) Involved in Teaching the Course</b>	-
13.	<b>Learning Language</b>	English
14.	<b>Learning Types</b>	<input checked="" type="checkbox"/> Face to face <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
15.	<b>Online Platforms(s)</b>	<input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams
16.	<b>Issuing Date</b>	6/10/2024
17.	<b>Revision Date</b>	

**18. Course Coordinator:**

Name: .....	Contact .....
Office number: -----	Email:

**19. Other Instructors:**

None
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## 20. Course Description:

This three-credit hour course is mandatory for nursing students. The course is designed to introduce nursing students to biochemistry via reviewing general and organic chemistry, covering the basic concepts of structures and functions of macromolecules, discussing basic information of enzymes including their mechanisms of action and regulation, the critical cofactor critical for enzyme function, and their use in the clinic, describing major metabolic pathways, and presenting main concepts of molecular biology and its technologies.

## 21. Program Intended Learning Outcomes:

PLO's	*National Qualifications Framework Descriptors*		
	Competency (C)	Skills (B)	Knowledge (A)
1.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\* Choose only one descriptor for each learning outcome of the program, whether knowledge, skill, or competency.



**22. Course Intended Learning Outcomes:** (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

Course ILOs #	The learning levels to be achieved					
	Remember	Understand	Apply	Analyse	Evaluate	Create
Identify critical body elements and biochemical fundamentals, including non-covalent interactions and essential molecules like carbon and water.	✓					
Understand concepts related to acids, bases, buffering systems, and their physiological roles, including calculations using the Henderson-Hasselbalch equation.	✓	✓	✓			
Describe the structures, classifications, and biological roles of carbohydrates, lipids, proteins, and nucleic acids.	✓	✓				
Explain the major organic functional groups, their properties, and reactions, applying this to biochemical molecules.	✓	✓				
Comprehend protein structures (primary to quaternary) and enzyme functions, including enzyme kinetics and regulatory mechanisms.		✓	✓			
Outline the primary metabolic pathways for carbohydrates, lipids, and amino acids, highlighting their role in energy production and physiological states.	✓	✓	✓			
Understand DNA and RNA structure, replication, transcription, and translation processes, including higher-order DNA organization.	✓	✓				
Perform biochemical calculations (pH, buffering capacity) and predict changes based on physiological systems.		✓		✓		
Relate metabolic and enzymatic pathways to clinical conditions, including enzyme deficiencies and nutritional components like vitamins.		✓	✓		✓	
Recognize the use of recombinant DNA technologies in diagnostics and therapeutic applications.		✓				✓



**23. The matrix linking the intended learning outcomes of the course -CLO's with the intended learning outcomes of the program -PLOs:**

PLO's CLO's	1	2	3	4	5	6	7	Descriptors**		
								K	S	C
1							✓			
2			✓							
3							✓			
4							✓			
5							✓			
6							✓			
7										
8			✓							
9	✓			✓	✓					
10			✓				✓			



## 24. Topic Outline and Schedule:

Week	Lecture	Topic	Intend ed Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods**	Resources
1	1	Introductio n, intermolec ular forces, carbon, water	1	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamenta ls of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapters: 5, 8, 12</b>
	2	Acid and bases, pH, buffers, titration	1	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamenta ls of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 10</b>
2		Introductio n to organic chemistry: structure, properties & important reactions of hydrocarbo ns, alcohols, phenols, ethers, aldhyds, ketones, carboxylic acids & amines	2	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamenta ls of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapters: 12 - 17</b>



3		Carbohydrate structures, classes, function	3	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 22</b>
4		Lipids: structure & classification, Fatty acids, Triglycerides, phospholipids, Glycolipids & cholesterol, cell membrane	4	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 24</b>
5		Amino acids and proteins: amino acids, protein structure, properties of proteins	5	Face to Face				McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 18</b>
6		Enzymes: general properties of enzymes, classes, the effect of substrate & enzyme concentration on reaction	6	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson.



		rate, enzyme  inhibition & regulation of enzyme activity, enzymes in medicine					<b>Chapter: 19</b>
7		Vitamins vitamins, minerals & trace elements in nutrition	6	Face to Face		Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamenta ls of general, organic, and biological chemistry</i> (5th ed.). Pearson.  <b>Chapter: 19</b>
8		Generatio n of Biochemi cal Energy: citric acid cycle & respirator y chain	7	Face to Face			McMurry, J., & Castellion, M. E. (2004). <i>Fundamenta ls of general, organic, and biological chemistry</i> (5th ed.). Pearson.  <b>Chapter: 21</b>
9		Carbohydr ate Metabolis m: digestion, glucose metabolism , glycolysis, glyconege nesi s	8	Face to Face		Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamenta ls of general, organic, and biological chemistry</i> (5th ed.). Pearson.  <b>Chapter: 23</b>
10		Lipids Metabolis m: digestion,	9	Face to Face		Exams	McMurry, J., & Castellion, M. E.



		absorption, transport, oxidation & biosynthesis of fatty acids, biosynthesis of cholesterol, ketoacidosis						(2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 25</b>
11		Protein and amino acid Metabolism: catabolism & of amino acids, urea cycles, amino acids conversion, synthesis of amino acids catabolism	9	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 25</b>
12		Nucleic acid and protein synthesis: heredity & the cell, structure of nucleic acids, RNA, genetic code translation	10	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson. <b>Chapter: 26</b>
13		Genomics Mapping Human genome, chromosomes	10	Face to Face			Exams	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i>





								(5th ed.). Pearson. <b>Chapter: 27</b>
<b>14</b>		Genomics Mapping Human genome, chromosomes	<b>10</b>	<b>Face to Face</b>			<b>Exams</b>	McMurry, J., & Castellion, M. E. (2004). <i>Fundamentals of general, organic, and biological chemistry</i> (5th ed.). Pearson.  <b>Chapter: 27</b>

## 25. Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	*Mark wt.	CLO's										
		1	2	3	4	5	6	7	8	9	10	
Quiz 1	10	X	X									
Midterm Ex.	30	X	X	X	X	X						
Quiz 2	10						X	X	X			
Final Ex.	50	X	X	X	X	X	X	X	X	X	X	X
Total 100%	100											

## 26. Course Requirements

- Each student registered in this course should have a smart device, such as computer, laptop, tablet or smart phone.
- Each student registered in this course should have stable access to the internet
- All announcements of the course will be posted on the university e-learning website (Moodle)



## 27. Course Policies:

### A- Attendance policies:

According to university regulations please refer to

<http://units.ju.edu.jo/ar/LegalAffairs/Lists/Regulations/DispForm.aspx?ID=246&ContentTypeId=0x0100C7850F392E786A439F935E088708707E>

### B- Absences from exams and submitting assignments on time:

### C- Health and safety procedures:

### D- Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating, plagiarism, misbehaviour are attempts to gain marks dishonestly and includes; but not limited to:

- Copying from another student's work.
- Using materials not authorized by the institute.
- Collaborating with another student during a test, without permission.
- Knowingly using, buying, selling, or stealing the contents of a test.
- Plagiarism which means presenting another person's work or ideas as one's own, without attribution.

Using any media (including mobiles) during the exam

- **The participation or the commitment of cheating will lead to applying penalties according to the University of Jordan Students' Discipline rules and regulations No. (94, 49, 47,27, 29): <http://units.ju.edu.jo/ar/LegalAffairs/Regulations.aspx>**

### E- Grading policy:

According to university regulations

### F- Available university services that support achievement in the course:

## 28. References:

