

Course Syllabi

Course Title and Code	Biochemistry – MDL111
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➤ **Course Identification and General Information:**

Department	Deanship of Educational Services	Course Level	Level 2
Contact Hours	1 theory class per week for two hours 1 practical class per week for two hours	Credit Hours	3 (2+2)
Web Address	http://www.des.qu.edu.sa		

➤ **Course Instructor/Coordinator's Name:** Dr. Ashraf Saif

➤ **Textbook Title, Author, and Year:**

- Principles of Biochemistry by D. Voet, C. Pratt and J. Voet. John Wiley (2013), ISBN: 978-1-118-09244-6. (4th Edition).

➤ **Other Supplemental Materials:**

- Lehninger Principles of Biochemistry, 4th Edition (2004), by David L. Nelson and Michael M. Cox. ISBN-13: 978-0716762652.
- Fundamentals of Biochemistry, 3th edition (2001), by Voet, D., Voet, J., and Pratt, C.W. ISBN-13: 978-0471417590

➤ **Specific Course Information:**

- **Catalog Description:** Biochemistry: Principles and Problems.
- **Pre-requisites:** It requires Knowledge of Chemistry at the high school.
- **Co-Requisites:** None.
- **Required, Elective, or Selected Elective:** None.

➤ **Specific Goals for the Course:** Summary of the main learning outcomes for enrolled students.

- The aim of this course is to enhance the knowledge of students to understand the basic principles of biochemistry.
- This course also prepares and develops student skills at PYP in the area of biochemistry and provides students with the required knowledge in English to qualify them to the scientific colleges.
- To enhance the thinking abilities of students in the area of Biochemistry.

➤ **Program Outcomes Addressed by the Course:**

This course provides the following outcomes with the following relationship:

Preparatory Year Program Outcome	Relationship to Course
1. The course contributes to the development of student skills in English writing, reading and conversation.	High
2. The course contributes to the development of student skills in computer and its application in learning process	Low
3. The course helps to develop the skill of the students in the learning process.	High
4. The course strengthens ties education collaborative learning (peer-to-peer and other appropriate sources).	Medium
5. The course fosters the development of student skills in creative thinking, innovative and positive.	Medium
6. The course instills the principles and positive communication within groups (enjoy the team spirit).	Medium
7. The course contributes to the development of student skills in methods of constructive dialogue.	Medium
8. The course fosters the development of student skills in making decisions.	Medium
9. The course helps to develop the skill of the students in problem solving.	high
10. The course helps to develop the skill of students on constructive criticism.	Medium
11. The course helps to develop the skill of students in compliance and accounting.	Low
12. The course helps to develop the skill of students in interaction with the University environment and for undergraduate study.	High
13. The course helps to develop the skill of students in interaction with the environment and the needs and attitudes of the community and science.	High
14. The course helps to develop the skill of students on effective interaction on student activities.	Medium
15. The course helps to develop student skills in the effective interaction in volunteer work.	Medium

16. The course helps Deanship of Educational Services leadership.	Medium
17. The course helps to develop student skills in linking information to realistic applications.	High
18. The course helps to develop the skill of students on work ethic.	Medium
19. The course helps to develop student skills in estimating functional responsibility toward national growth.	Medium
20. The course helps to develop student skills in assessing the scientific career path chosen.	high

➤ **Brief List of Topics to be covered:**

- Life, and Cells
- Physical and Chemical Properties of Water
- Overview of DNA Function, and Engineering
- Amino Acids: The Building Blocks of Proteins
- Physiological Activities of Proteins
- Saccharide Chemistry
- Lipids, Bilayer, and Membranes
- Mechanisms of Enzyme Action
- Hormones, and Signal Transduction
- Bioenergetics
- Glycolysis and Pentose Phosphate Pathway
- The Citric Acid Cycle
- The Genetic Code and Translation
- Gene Expression in Prokaryotes and Eukaryotes

➤ **Outcome Assessment:**

1. Direct Assessment

- Midterm Written Exam I
- Midterm Written Exam II
- Final Written Exam
- Quizzes
- Homework
- Integrative Projects
- Students' Portfolios
- Case Study
- Oral Exams
- Written Reports
- Participation in Lecture
- Illustrative Presentations
- Use of Computer Facilities by Students
- Reading of References Related to Course Topics
- Team Work
- Practice in the Lab

2. Indirect Assessment

- Pre-Course Questionnaire
- Post-Course Questionnaire
- Group Discussions
- Students' Interviews

Course Outline:

Week	Date	Chapter	Topics	Pages
1		Introduction	Introduction	Introduction
2		Chapter 1	Life, Cells, and Thermodynamics	1-8
3		Chapter 2	Physical and chemical properties of Water	22-37
4		Chapter 3	Overview of DNA Function, and Engineering	40 - 51
5		Chapter 4	Amino Acids: the Building Blocks of Proteins	76-90 Exclude Boxes, and (1-D)
6		Chapter 7	Physiological Activities of Proteins	176-196 Exclude Boxes, equation, curves, and calculation
7		Chapter 8	Saccharide Chemistry	217 - 233 Exclude Boxes
8		Revision		
Mid-Term Vacation				
9		Mid-Term Exam		
10		Chapter 9	Lipids, Bilayer, and Membranes	241 - 246 Exclude Boxes
		Chapter 11	Mechanisms of Enzyme Action	315 – 320 Exclude Boxes
11		Chapter 13	Hormones and Signal Transduction	396 - 402 Exclude Boxes
12		Chapter 14	Bioenergetics	436– 443 Till end of (C) Exclude Boxes
		Chapter 15	Glycolysis and Pentose Phosphate Pathway	472 – 90 Exclude Boxes, and Process Diagrams

13		Chapter 17	The Citric Acid Cycle	551 - 570 Exclude Boxes
14		Chapter 27	The Genetic Code and Translation	962– 968 Exclude Boxes
		Chapter 28	Gene Expression in Prokaryotes and Eukaryotes	1013– 1023 Exclude Boxes
15		Revision		
		<i>Final Exam</i>		
		<i>Final Exam</i>		
		Term Vacation		

Marks distribution for MDL111

- 1) 5 marks for quiz 1
- 2) 5 marks for quiz 2
- 3) 30 marks for Midterm Exam
- 4) 60 marks for Final Exam