



Jordan University of Science and Technology
Faculty of Applied Medical Sciences
Allied Medical Sciences Department

LM242 Molecular Biology - JNQF Level: 7

Second Semester 2023-2024

Course Catalog

3 Credit Hours. This course will give a broad introduction to the essential concepts of molecular biology and genetics describes. It will cover the central dogma of biology (DNA-RNA- Protein) and describe the nature of the genetic material and how it is transmitted from parents to offspring. The course will cover nucleic acid structure. It will also cover the following topics in detail: Cell cycle, understanding mechanisms of DNA replication, DNA repair and recombination, transcription, translation, regulation of gene expression. This course will handle the above topics in both prokaryotes and eukaryotes.

Teaching Method: Blended

Text Book

Title	Genetics: principles & analysis
Author(s)	Brooker, Robert J
Edition	8th Edition
Short Name	1
Other Information	2024

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	Genetics: A Conceptual Approach	Benjamin A. Pierce	7th Edition	2020

Instructor

Name	Dr. ROWIDA AL-MOMANI
Office Location	-
Office Hours	
Email	rfalmomani7@just.edu.jo

Instructor

Name	Dr. MOHAMMAD AL SHBOUL
Office Location	-
Office Hours	
Email	maalshboul@just.edu.jo

Class Schedule & Room
<p>Section 1: Lecture Time: Mon : 11:30 - 13:00 Room: NB49</p> <p>Section 2: Lecture Time: Wed : 10:00 - 11:30 Room: NB49</p>

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Overview of Genetics ? Molecular Genetics ? The Central Dogma	From 1
Week 2	Transmission Genetics Cell cycle: Mitosis and Meiosis	From 1, From 2
Weeks 3, 4	Mendelian inheritance / Non-Mendelian Inheritance	From 1
Week 5	The structure of DNA RNA / The Nature of Genetic Material / DNA Structure / Genes Made of RNA / Physical Chemistry of Nuclei Acid	From 1
Week 6	Genome organization ? Neucleosome ? Chromatin Structure	From 1
Weeks 7, 8	An Introduction to Gene Function ? Storing Information ? Replication in Bacteria ? Replication in Eukaryotes	From 1
Weeks 9, 10	DNA Replication, Damage, and Repair ? General features of DNA Replication ? Enzymology of DNA Replication ? Mutations ? DNA Damage and Repair	From 1
Week 11	Molecular Properties of Genes The Mechanism of Transcription of Bacteria ? RNA Polymerase ? Promoters ? Transcription Initiation ? Elongation ? Termination of Transcription	From 1, From 2
Week 12	Molecular Properties of Genes The Mechanism of Transcription of Eukaryotes ? RNA Polymerases ? Promoters ? Transcription Initiation ? Elongation ? Termination of Transcription	From 1, From 2
Week 13	Post Transcriptional Modification ? Capping ? Polyadenylation ? The Mechanism of Splicing of Nuclear mRNA Precursors	From 1
Week 14	Gene Regulation in Eukaryotes Epigenetics	From 1
Week 15	The Mechanism of Translation I: ? Initiation of Translation in Bacteria ? Initiation in Eukaryotes ? Control of Initiation	From 1, From 2

Week 16	The Mechanism of Translation II ? The direction of Polypeptide Synthesis and of mRNA Translation ? The Genetic Code ? Termination ? Post Translation	From 1, From 2
------------	--	-------------------

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the mean of Molecular Biology [10SLO1] [10L7S1]	10%	First Exam
Understand basic structures of nucleic acids [10SLO1] [10L7K1]	10%	First Exam, Quiz
Understand organization of the genome inside cells [10SLO1] [10L7K1]	10%	First Exam, Quiz
Discuss the DNA replication, gene expression and regulation [15SLO1] [15L7K1]	15%	First Exam, Final Exam, Quiz
Discuss the types and sources of DNA damage and its repair [10SLO1] [10L7K1]	10%	Second Exam, Quiz
Understand and explain the process of protein synthesis and protein structures and organization [10SLO1] [10L7K1]	10%	Second Exam, Final Exam, Quiz
Distinguish between Prokaryotes and eukaryotes in terms of DNA replication, transcription and translation processes [15SLO1] [15L7S2]	15%	Second Exam, Final Exam
Differentiate between meiosis and mitosis [10SLO1] [10L7S2]	10%	First Exam
Utilize the basic knowledge to understand and apply it in the clinical practice [10SLO2] [10L7C2]	10%	

Relationship to Program Student Outcomes (Out of 100%)											
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	MSLO1	MSLO2	MSLO3	MSLO4	MSLO5	MSLO6
90	10										

Relationship to NQF Outcomes (Out of 100%)			
L7K1	L7S1	L7S2	L7C2
55	10	25	10

Evaluation	
Assessment Tool	Weight
First Exam	25%
Second Exam	25%
Final Exam	40%
Quiz	10%

Policy

Attendance	Students are expected to attend all classes. A student should not miss more than 20% of the classes during a semester. Those exceeding this limit will receive a failing grade regardless of their performance and the grade in this course will be considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college.
Make-up Exam	Make-up exams are entitled to students who miss the exam with an accepted legal or medical excuse endorsed by the instructor within 24 hours after the scheduled exam (please review university regulations for more details).

Date Printed: 2024-02-28