



Jordan University of Science and Technology
Faculty of Science & Arts
Biotechnology & Genetic Engineering Department

BT451 Molecular Biology (1)

Summer Semester 2019-2020

Course Catalog

3 Credit Hours. The course aims to provide the student with a comprehensive overview of the basic Molecular Biology in terms of DNA structure, DNA replication, Chromosomal basis of inheritance, mutation and repair of DNA, Recombination and transposition, mechanism of transcription, and introduction to the basic techniques in molecular biology and Model organisms genomes.

Text Book

Title	Molecular Biology of the Gene
Author(s)	James D. Watson, Tania A. Baker, Tephden P. Bell, Alexander Gann, Michael Levine, and Richard Losick
Edition	7th Edition
Short Name	Ref # 1
Other Information	

Instructor

Name	Dr. Nisreen Al-Quraan
Office Location	PH1-L0
Office Hours	Sun : 08:00 - 09:00 Sun : 10:00 - 11:00 Mon : 10:30 - 11:30 Tue : 10:30 - 11:30 Wed : 08:00 - 09:00 Wed : 09:00 - 10:00
Email	naquraan@just.edu.jo

Class Schedule & Room

Section 1:

Lecture Time: Sun, Mon, Tue, Wed : 14:30 - 16:00

Room: منصة الكترونية

Prerequisites

Line Number	Course Name	Prerequisite Type
963413	BT341 Molecular Genetics	Prerequisite / Pass

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2	The Structure of DNA and RNA	Chapter 4+5 From Ref # 1
Weeks 3, 4	Chromosomes, chromatin, and nucleosome	Chapter 8 From Ref # 1
Weeks 5, 6	The Replication of DNA	Chapter 9 From Ref # 1
Weeks 7, 8	The Mutability and Repair of DNA	Chapter 10 From Ref # 1
Weeks 9, 10	Homologous Recombination at the Molecular Level	From Ref # 1
Week 11	Site-Specific Recombination and Transposition of DNA	Chapter 12 From Ref # 1
Weeks 12, 13	Mechanism of Transcription	Chapter 13 From Ref # 1
Weeks 14, 15	Techniques of Molecular Biology	Chapter 7 From Ref # 1
Week 16	Model Organisms	Appendix I From Ref # 1

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Know and describe the complete structures and the chemistry of DNA/RNA components, DNA topology, the histone and nonhistone components of chromatin, copying mechanism in detail and the enzymes that synthesize DNA and the complex molecular machines that allow both strands of the DNA to be replicated simultaneously [1A]	25%	First Exam
Describe and discuss the mechanisms by which DNA can be damaged, the molecular mechanisms by which protein complexes repair or bypass different forms of DNA damage and provide examples of how homologous recombination is used to ensure genome stability and promote genetic diversity [1A, 1D]	25%	Second Exam
Define and explain how endogenous biological processes like site-specific recombination, transposition, and V(D)J recombination system are being used to modify eukaryotic genomes [1A, 1D]	12%	Final Exam

Trace the process of transcription by which nucleotide sequence information is transferred from DNA to RNA, flow of information from the copying of the gene into an mRNA in prokaryotes and eukaryotes [1A]	18%	Final Exam
Describe and understand many of the fundamental techniques of molecular biology that are widely used in studying nucleic acids and proteins and understand the important feature of various model organisms that can be manipulated and studied genetically with the use of the many traditional and new powerful tools of molecular biology. [1A, 1B, 1C]	10%	Final Exam
Demonstrate the effective reading and critical thinking in this course in term of short answer questions after the finish of each chapter [1D]	10%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)					
A	B	C	D	E	F
64.83	3.33	3.33	28.50		

Evaluation	
Assessment Tool	Weight
First Exam	25%
Second Exam	25%
Final Exam	50%

Policy	
Class Attendance	1. Your class attendance is mandatory. Absences in excess of 20% of the total lecture hours will result in your being dropped from the course with a failing grade
Makeup Exams	Make-up exam appeals should be filed within one week of the missed exam
Cell Phones	Cell phones are completely prohibited during examinations according to the university regulations i.e. you are not allowed to bring your phone into the exam hall
Cell Phones	Cell phones must be turned off during lectures. No incoming or outgoing calls or text messages are allowed
Cheating	Unethical conduct, including cheating during examinations, will result in punishment by the university administration

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