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

LM789 Advanced Molecular Genetics Practical Training - JNQF Level: 7

First Semester 2024-2025

Course Catalog
3 Credit Hours. The course focuses on utilizing several and recent technologies in molecular biology. Students will practice several experiments during the course, reporting and analyzing the results of these experiments and draw conclusions. Safety and Bio-risk management of laboratories setting is an emerging issue; thus 2 weeks are designated to discuss laboratory safety practice. At the end of the course, students are expected to understand the basic principles of several technologies, utilize these technologies in real scenario cases and report the analysis of these experiment.
Teaching Method: On Campus

Text Book	
Title	Molecular diagnostics (fundamentals, methods and clinical applications), 3rd edition.
Author(s)	Lela Puckingham
Edition	3rd Edition
Short Name	MD
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
MD	Molecular diagnostics	George P. Patrinos, Wilhelm J. Ansorge, Phillip B. Danielson	3rd Edition	
CCMD	Clinical chemistry and molecular diagnostics	Nader RIFAI, Andrea R. Horvath, Carl T. Wittwer	6th Edition	

Instructor	
Name	**Dr. MARYA OBEIDAT**
Office Location	-

Office Hours	Sun : 10:00 - 11:00 Tue : 09:00 - 10:00 Wed : 11:00 - 13:00 Thu : 10:00 - 12:00
Email	mmobeidat82@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue, Thu : 14:30 - 16:30 Room: HOSPITAL

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	DNA Extraction	
Week 2	Primer design and PCR applications	
Week 3	Gel Electrophoresis	
Week 4	DNA Sequencing in genetic testing	
Week 5	DNA Sequencing in genetic testing	
Week 6	DNA Applications in forensic science	
Week 7	RNA extraction	
Week 8	cDNA synthesis	
Week 9	quantitative real time PCR Applications	
Week 10	An Introduction to Next-Generation Sequencing Technology; principle and application in toxicology, forensic, and genetic testing	
Week 11	An Introduction to Bio risk management	
Week 12	Research article analysis	
Week 13	Research article analysis	
Week 14	Practical assessment	

Week 15	Practical assessment	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the different molecular technologies used in genetic testing and profiling. [1MSLO1] [1L7K1]	40%	
Perform analysis of data obtained from different molecular experiments. [1MSLO2, 1MSLO5, 1MSLO6] [1L7S1, 1L7S2, 1L7C3, 1L7C4]	40%	
Understand how to perform biorisk assessment and take adequate measures based on the assessment. [1MSLO4] [1L7S3, 1L7C1, 1L7C2]	20%	

Relationship to Program Student Outcomes (Out of 100%)											
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	MSLO1	MSLO2	MSLO3	MSLO4	MSLO5	MSLO6
						40	13.33		20	13.33	13.33

Relationship to NQF Outcomes (Out of 100%)							
L7K1	L7S1	L7S2	L7S3	L7C1	L7C2	L7C3	L7C4
40	10	10	6.67	6.67	6.67	10	10

Evaluation	
Assessment Tool	**Weight**
Student Attendance and participation	10%
Lab reports	20%
Practical Tests	20%
Final Exam	50%

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