

TISHK INTERNATIONAL UNIVERSITY
FACULTY OF APPLIED SCIENCE
Department of MEDICAL ANALYSIS,
-2022 Fall
Course Information for MA 307 MOLECULAR BIOLOGY I

Course Name: MOLECULAR BIOLOGY I					
Code MA 307	Regular Semester 5	Theoretical 2	Practical 2	Credits 3	ECTS 4
Name of Lecturer(s)- Academic Title:	Shatha Jumaah - Lecturer				
Teaching Assistant:	Mr.Mohammad Qadir				
Course Language:	English				
Course Type:	Main				
Office Hours	Sunday- Thursday 13-14				
Contact Email:	shatha.saadi@tiu.edu.iq Tel:07731329529				
Teacher's academic profile:	PhD Holder				
Course Objectives:	The molecular biology as the fundamental tool of biology nowadays needs to be covered and the course goals are for understanding the basis of molecular biology, the nucleic acid, codons, traits and behaviours. The characteristics of genomic materials and explaining the molecular basis of life in all living systems. The ways of genetic inheritance and the transfer of information through the genomes into generations. The secrets behind each steps of central dogma and the mechanisms of gene transcription and translations. The factors influencing processes of molecular biology and the methods of which genetic information translated to protein.				
Course Description (Course overview):	This molecular biology course will look at how genetics and biochemistry interact. Students will learn about the principles that govern how biomolecules interact in different areas of the cell, with a particular emphasis on DNA replication, transcription, and translation. Students will study several elements of molecular biology in depth in this course and demonstrate their grasp of procedures including molecular cloning, macromolecule blotting, and polymerase chain reaction, which are often employed in research.				
COURSE CONTENT					
Week	Hour	Date	Topic		
1	2	4-7/10/2021	General concept of Molecular Biology, Definition of molecular biology		
2	2	10-14/10/2021	DNA different genome type, What are the difference and similarities between prokaryote and eukaryote of the genome		
3	2	17-21/10/2021	Nucleic acid , Chemical structure , Types of nucleic acid , RNA, DNA, Nucleoside, nucleotide and deoxynucleotide.		
4	2	24-28/10/2021	DNA methylation histone modification		
5	2	31/10-4/11/2021	DNA replication, definition,. Mechanism of DNA replication, Difference between prokaryote and eukaryote in DNA replication		
6	2	7-11/11/2021	Gene expression , Central dogma in molecular biology Transcription , Translation		
7	2	14-18/11/2021	Midterm Exam		
8	2	21-25/11/2021	Midterm		
9	2	28/11-2/12/2021	Steps of DNA transcription , Initiation , Elongation Termination , and Posttranscriptional modification		
10	2	5-9/12/2021	Post translation Modification of Protien		
11	2	12-16/12/2021	, Proteins, Enzymes & Proteomics		

12	2	19-23/12/2021	Difference between prokaryote and eukaryote Structure of tRNA , mRNA , rRNA , ribosome and site of mRNA binding , ribosome in prokaryote and eukaryote.
13	2	26-30/12/2021	Genetic code , Gene Cloning
14	2	2-5/1/2022	Molecular base of Cancer
15	2	9-13/1/2022	Final Exam
16	2	16-20/1/2022	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	This course Provide a strong background in the cellular and molecular aspects of biology with particular emphasis on eukaryotes.
2	This course deals with nucleic acids and proteins and how these molecules interact within the cell to promote proper growth, division, and development.
3	It is a large and ever-changing discipline. This course will emphasize the molecular mechanisms of DNA replication, repair, transcription, splicing, protein synthesis, and gene regulation in different organisms.
4	This course takes an in-depth look at some rapidly evolving fields, including chromatin structure and function, genome editing techniques, back splicing, and regulation of gene expression by different types of RNAs.
5	The factors influencing processes of molecular biology and the methods of which genetic information translated to protein.

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

Program Learning Outcomes	Cont.
1 Evaluate clinical laboratory data by interpreting laboratory results and relating the data to various disease states.	A
2 apply principles of evidence-based medicine to determine clinical diagnoses.	A
3 apply the basic principles of gross and microscopic anatomy, physiology, biochemistry, immunology, microbiology/virology.	A
4 formulate and implement acceptable treatment modalities to various disease states.	A
5 use technology effectively in the delivery of instruction, assessment, and professional development.	A
6 exhibit essential employability qualities by demonstrating laboratory safety, analyzing laboratory results, and displaying professional conduct.	A
7 exhibit organizational skills, accountability, and ethical behavior.	A
8 apply skills needed in operating laboratory equipment for testing, assessing quality assurance for lab equipment, and adhering to standard safety practices in the laboratory environment.	A
9 apply problem-solving and decision-making skills.	A
10 apply and promote health policies and regulatory standards in the field career.	A
11 develop research in the field of medical analysis using qualitative and quantitative methods.	A

Prerequisites (Course Reading List and References):	// "Introduction to molecular biology //" Paollela ,P. McGraw – Hill .USA // "Molecular biology //" Weaver, R.F.3rd ed. // "Cell and molecular biology //" karp, G.3rd ed. 1-Journal of Algorithms for Molecular Biology 2-APPLIED MICROBIOLOGY AND BIOTECHNOLOGY 3-Biotechnology Journal
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Student's obligation (Special Requirements):	Student //s obligation It is your responsibility to come to class regularly and to take notes. If you miss a class, I assume you'll contact at least two other classmates to learn what happened in class on the day you were absent, and to receive any materials distributed that day. Students who arrive to class late not only miss important information, but also disrupt other students' learning. For this reason, I expect that you will be on time and ready to begin work.
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Course Book/Textbook:	Molecular Biology, 5/e by Robert Weaver
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Other Course Materials/References:	Books Lecture handouts PowerPoints presentations Board clarification Note takings
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Teaching Methods (Forms of Teaching): Lectures, Practical sessions, Exercises, Presentation, Seminar, Self evaluation, Project, Assignments, Demonstation, , ,

COURSE EVALUATION CRITERIA

Method	Quantity	Percentage (%)
Attendance	1	5
Quiz	2	5
Homework	1	5
Midterm Exam	1	10
Laboratory	1	5
Practical Exam		5
Midterm Exam(s)	1	20
report	1	5
Final Exam	1	40
Total		100

Examinations: Essay Questions, True-False, Fill in the Blanks, Multiple Choices, Short Answers, Matching, , ,

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	Quantity	Workload Hours for 1 quantity*	Total Workload
Theoretical Hours	16	2	32
Practical Hours	16	2	16
Final Exam	1	2	2
Attendance	1	1	1
Quiz	2	1	2
Homework	1	1	1
Midterm Exam	1		0
Laboratory	1		0
Practical Exam			0
Midterm Exam(s)	1		0
report	1		0
Total Workload			54
ECTS Credit (Total workload/25)			2.16

Peer review

Signature:
Name:
Lecturer

Signature:
Name:
Head of Department

Signature:
Name:
Dean