Course Syllabus

(Molecular Biology MDLS 301)

Instructor Information		Office Hours	
Instructor Name	Dr. Einas Osman	**Sunday**	8:00 – 9:00
Office Location	CAHS	**Monday**	
Telephone Ext.	1169	**Tuesday**	8:00 – 9:00
Email	Einas.osman@asu.edu.om	**Wednesday**	11:00 – 12:00
		Thursday	9:00 – 12:00

Academic Year	2023 - 2024	**Semester**	Spring 2024
Course Code & Title	Molecular Biology MDLS 301		
Credit hours	3	**Level of study**	Undergraduate
College / Centre	CAHS		
Co-requisites	MDLS285	**Pre-requisites**	BIOL201

Course Location & Class Times

Section	Days	Time	Room
1	M, W	9:30 – 10:45	CAHS-203

Course Outline

This course will provide background information about nucleic acids structures (DNA and RNA), genome organization in prokaryotes and eukaryotes, DNA replication, DNA repair and recombination, DNA transcription, regulation of gene expression, RNA processing and modifications, protein synthesis and folding, and molecular biology of cancer.

Textbook:

- David P. Clark, Nanette J. Pazdernik and Michelle R. McGehee. Molecular biology, Academic Press; 3th ed, 2019
- Susan Carson, Heather Miller, Melissa C. Srougi, and D. Scott Witherow. Molecular Biology Techniques: A Classroom Laboratory Manual, Academic Press; 4th ed, 2018.

Other Reference Material:

. National Center for Biotechnology Information (NCBI): https://www.ncbi.nlm.nih.gov/
2. Protein Data Bank (PDB): https://www.rcsb.org/
3. Molecular Biology of the Cell Online Textbook: https://www.ncbi.nlm.nih.gov/books/NBK26861/

4. Cold Spring Harbor Laboratory DNA Learning Center: https://www.dnalc.org/
5. University of Utah Learn Genetics Site: https://learn.genetics.utah.edu/
6. DNA Subway by NYU: https://dnasubway.genetics.utah.edu/

THE LEARNING OUTCOMES MUST BE TAKEN FROM THE OFFICIAL COURSE DESCRIPTOR – no edits

Learning Outcomes for this course
Learning Outcomes *(Definitive)*
Upon successful completion of this course, students will be able to**:**
1. Explain the basic structures of nucleic acids and organization of the genome inside cells.
2. Identify and experience all replication of the genetic materials, Transcription and regulation of gene expression.
3. Explain process of protein synthesis and protein structures and organization and to differentiate between oncogenes and tumor-suppressor genes.

Course Delivery Plan		
Week	**Lecture Topics**	**Learning outcomes**
1	Introduction to Molecular Biology	1
2	Nucleic Acids: DNA & RNA Structure and function	1
3	Transcription in prokaryotes and eukaryotes	1, 2
4	Translation process	2, 3
5	Protein structure	2, 3
6	Epigenetics and Gene expression	3
7	DNA recombination and Recombinant DNA technology	3
8	Midterm	
9	Genome regulation	3
10	Cell cycle (Miosis, Mitosis and checkpoint)	2
11	Post transcriptional gene regulation	2, 3
12	Molecular Biology of cancer I	2
13	Molecular Biology of cancer 2	3

Course Delivery Plan		
Week	**Lecture Topics**	**Learning outcomes**
14	Computational Biology & Bioinformatics	3
15	Molecular Technology: Social, Legal & Ethical Issues	1, 2, 3

Grading Policy	
Assessment	**Percentage of final mark (%)**
First Mid-term Examination	30
Quizzes	20
Assignment/ Homework	10
Final Examination	40
TOTAL	**100%**

University Policies

Academic Misconduct

ASU expects all students to engage in all academic pursuits in a manner that is above reproach and to maintain complete academic honesty and integrity in their academic experiences both in and out of the classroom. The University will initiate disciplinary proceedings against a student accused of any form of academic dishonesty, including but not limited to cheating on an examination or other academic work, plagiarism, collusion, and/or the abuse of resource materials.

Attendance

The University policy is that students are to attend all classes and to arrive on time. If you are absent for 10% of the lectures then you will be given First Warning. If you are absent from lectures for 20% of the semester then you will be withdrawn from the course and issued a withdrawal grade of FW.

Attendance Policy: You will get **A** for Absence, **P** for Presence, **T** for Tardy and **E** for Excuse. 6 x tardy = 1 Absence

Electronic devices

Cell phones, Blackberries, iPods, PDAs, or any other electronic devices are not to be used in the classroom. Please make sure to bring a calculator with you to class. Calculators on other devices are strictly prohibited. Information exchanges on these devices during class are also prohibited.

Academic Regulations

ASU's Academic Regulations, policies and procedures are available in the University Shared drive folder **ASU Policies and Procedures**.

ASU VISION

ASU aspires to be a leading higher education institution in Oman that promotes authentic values, innovation and socio economic development

ASU MISISON

ASU advances knowledge through innovative learning and applied research that will contribute to the economic and social development of the region by providing a conducive environment enhanced by international collaboration

ASU Values

Endeavour: We will seek to perform our best in everything that we undertake to achieve our individual and the University's collective goals.
Respect: We will treat our students, staff and all the University's stakeholders with consideration and regard.
Openness and trust: We will be honest, sincere and trustworthy in all our dealings with the University's internal and external stakeholders.
Accountability: We will throughout the University be highly committed and responsible for our actions and performance.
Social Responsibility: We will consider the impacts of our actions and the University's activities on the welfare of our students, staff, the wider community and the environment.
Creativity: We will seek new ideas, approaches, and opportunities for the benefit of our students, staff and the wider society.

Graduate Attributes:

- ❑ Knowledge of a discipline
- ❑ Commitment to national development and Omani ethical values
- ❑ Innovative spirit
- ❑ Global insight
- ❑ Adaptability to changing environments