	Ministry of Higher Education and Scientific Research - Iraq University of Al Muthanna College of Applied of Medical Sciences Department of Environmental Health	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Biology			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	AMS 001				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Dr. Areej Shaker Jassum		**e-mail**	Areejshakeer@mu.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Dr. Areej Shaker Jassum		**e-mail**	Areejshakeer@mu.edu.iq	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date		12/3/2025	**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. This course describes the nature of biology science and the knowledge of the chemical basis of living organisms and how chemistry defines a large part of the biology study. 2. The students will Be known about the nature of organic bio-compounds (carbohydrates, proteins etc…) and their importance as building blocks of living systems. 3. To understand the characteristics of living organisms and the structure of cells (prokaryotic and eukaryotic). 4. Describe the composition and function of biological membranes, define passive transport- diffusion, osmosis, and facilitated diffusion and relate the changing conditions inside and outside of cells to these definitions. describe active transport and relate the changing conditions inside and outside of cells to the need for AT. 5. Description of cellular reproduction and the different types carried out by selected organisms and the nature of informational molecules (DNA and RNA) and the expression of this information through the process of gene expression. 6. Description of the different types of microorganisms (bacteria, fungi, Protista, and viruses) and their relationship with environmental
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the role of biology and the relevance of different biological processes to our daily life 2. Learn how to work in a safe and efficient environment inside the laboratory. 3. Use the microscope and learn the basic skills of light microscopy. 4. Describe the structure of the cell and learn the function of its different components 5. Compare a prokaryotic and a eukaryotic cell and highlight their differences. 6. Learn the basic concepts in mechanism to moving of materials across the cell membrane. 7. Study the processes of cell division and sexual reproduction. 8. Learn the principles of genetics and solve genetic problems. 9. Study the molecular characteristics of nucleic acids (DNA and RNA) and how nucleic acids and protein synthesis are interrelated. 10. Acquire an overview of the theory of evolution, the origin and the biodiversity of life. 11. Acquire an overview of the classification of microorganisms and their major characteristics. 12. Test hypotheses, run simple experiments and interpret the data inside the laboratory.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Introduction to biology</u> Biology: definition of biology science, branched of biology, characterized of living things, the kingdom of living things, characterized of each kingdom, The Chemical Building Blocks of Life, Carbon Provides the Framework of Biological Molecules, Carbohydrates Form both Structural and Energy-Storing Molecules, Proteins are the Tools of the Cell, Hydrophobic Lipids Form Fats and Membranes [4 hrs] <u>Part B- Structure of Cell</u> Cell: definition of cell, types of cells, different between types of cells, shape of cell, define of prokaryotic cell, characteristic of prokaryotic cell, structure of prokaryotic of cell, example of prokaryotic of cell (6 hrs)

	Eukaryotic cell: define of eukaryotic cell, characteristic of eukaryotic cell, structure of this cell, example of this cell, different between the animal and plant cell, structure of membranes in plant and animal cells, cell wall structure in plant cell, plasma membrane structure, function of plasm membrane, properties of plasm membrane, movement of material across the plasma membrane, passive transport (simple diffusion, facilitated diffusion, osmosis) , active transport , vesicle transport (endocytosis and exocytosis). (8hrs) Organelles of cell: nucleus, endoplasmic reticulum, ribosome, golgi apparatus, mitochondria lysosome, cytoskeleton. (4 hrs) Cell cycle: introduction to cell cycle, types of cell cycle, mitosis, stage of mitosis, meiosis, stage of meiosis. (4hrs) Nucleic acid: The nitrogenous bases are classified into two types, Deoxyribonucleic acid (DNA) structure, RNA (Ribonucleic acid) structure, the different between RNA and DNA, Genes structure, Replication process. Protein synthesis, Transcription process, Translation process (6 hrs). <u>Part C - Microorganisms</u> Bacteria: Define, General properties of bacterial, the classification of bacteria, based on cell wall contents, based on presence of flagella, based on requirement of oxygen, based on method of obtaining nutrition, Reproduction of Bacteria, Vegetative Reproduction of Bacteria, Binary Fission, Asexual reproduction of Bacteria (4hrs) Fungi: introduction to fungi, classification of fungi, reproduction of fungi (4 hrs) Protista: define of parasite, Classification of the of parasitology, Different Kinds of Parasites, Different kinds of Hosts, Life cycle of parasites, Direct life cycle, indirect life cycle, Host-parasite relationship, Effect of parasite on the Host. (4 hrs) Helminthes: introduction of helminths, Groups of Helminths, Phylum: Platyhelminths. (4 hrs) Viruses: Properties of viruses, Structure of virus, General Steps in Viral Multiplication, Classification of virus, Bacteriophages, Two life cycle of the bacteriophage. (4 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students to participate in class discussions, explain lectures by using modern technologies, improving and expanding their critical thinking skills. Also use brainstorming questions for students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقيم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	14	10% (10)	Lac (5, 8 and 9) Lab (1, 3, 4, 9,10,11)	LO #2, #3, #4; #5;
	Assignments	5	10% (10)	2, 7 , 9, 10, 12	#6; #7; #8 ; #9; #10;#11
	Projects / Lab.	6	10% (10)	3,4,7,9,13, 14	LO #1, #6 ; #10; #11
	Report	6	10% (10)	Lab 2,4,5,8,9,10	LO #3, #4; #5;
Summative assessment	**Midterm Exam**	2hr	10% (10)	1,2,3,4,5,6	LO #1-#6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of general biology
Week 2	Chemistry of Life
Week 3	Cell Structure and prokaryotic cell
Week 4	Eukaryotic cell structure
Week 5	Structure of Membranes
Week 6	Organelles of Cell
Week 7	Cell Cycle
Week 8	Nucleic Acid (DNA, RNA)
Week 9	Protein synthesis

Week 10	Midterm Exam
Week 11	Bacteria
Week 12	Fungi
Week 13	Protists
Week 14	Helminthes
Week 15	Viruses
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Biosafety
Week 2	Lab 2: Microscope
Week 3	Lab 3: Cell Structure, Prokaryotic
Week 4	Lab 4: Eukaryotic
Week 5	Lab 5: Diffusion in cell membrane
Week 6	Lab 6: Movement across the cell membrane in plant cell
Week 7	Exam
Week 8	Lab 7: cell division in yeast
Week 9	Lab 8: Blood component
Week 10	Lab 9: bacteria part 1
Week 11	Lab 10: Bacteria part 2
Week 12	Lab 11: Viruses
Week 13	Lab 12: Fungi
Week 14	Lab 13: protists
Week 15	Lab 14: Helminthes

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Mason, K. A., T. Duncan, G. Johnson, J. B. Losos, and S. R. Singer. 2018. Understanding Biology, 2 nd Ed. New York, NY: McGraw-Hill Education, Inc. (M)	No

Recommended Texts	Raven 2019, Biology, 12th edition, McGraw Hill	No

GRADING SCHEME
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي