Ministry of Higher Education and Scientific Research - Iraq
Al-Nahrain University
College of Science
Department of Medical Physics

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Biology			**Module Delivery**	
Module Type	Suplement			☒**Theory** ☒**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☒**Seminar**	
Module Code	FORE 1102				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		1	**Semester of Delivery**		2
Administering Department		MPHY	**College**	College of Science	
Module Leader	Dr. Ibrahim Kanaan ahmed		**e-mail**	ibrahimkanaan@nahrainuniv.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Nada Mohammed		**e-mail**	Nada.csc23@ nahrainuniv.edu.iq	
Module Reviewer	Zainab Ali Abdalhussain		**e-mail**	Zainab.ali@nahrainuniv.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**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 Aims أهداف المادة الدراسية	**At the end of the course, the students will be able to:** • Explain the scope of biology and molecular basis of life • Describe life activities from the cellular point of view • Manipulate basic biological tool, record data and draw conclusions • Develop scientific attitude, skill and conduct biological experiments using scientific procedures • Outline basic processes of energy transduction and synthesis of intermediate or final products in living cells • Understand the basic concepts of genetics and inheritance
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**Module 1: Introduction to Biology** **Define biology and apply its principles** • List the defining characteristics of biological life • Identify the different kinds of cells that make up different kinds of organisms • Describe classification and organizational tools biologists use, including modern taxonomy • Describe biology as a science and identify the key components of scientific inquiry **Module 2: Cellular Structure** **Identify and explain a variety of cellular components** • Understand why and how the light microscope and electron microscope are used in biology • Identify membrane-bound organelles found in eukaryotic cells • Demonstrate familiarity with various components of the cytoskeleton, including monomeric units • Demonstrate familiarity with various cell surface specializations **Module 3: Cell Division** **Describe and explain the various stages of cell division** • Understand chromosome structure and organization in eukaryotic cells • Identify the stages of the cell cycle, by picture and by description of major milestones • Identify and explain the important checkpoints that a cell passes through during the cell cycle • Identify the stages of meiosis by picture and by description of major milestones; explain why meiosis involves two rounds of nuclear division

	• Describe and explain a range of mechanisms for generating genetic diversity • Examine karyotypes and identify the effects of significant changes in chromosome number **Module 4: Cell Membranes** **Describe and explain the structure and function of membranes** • Describe the structure and function of membranes, especially the phospholipid bilayer • Distinguish between passive and active transport; explain how substances are directly transported across a membrane • Describe the primary mechanisms by which cells import and export macromolecules **Module 5: DNA Structure and Replication** **Relate DNA structure to the process of DNA replication** • Explain how DNA stores genetic information • Explain the role of complementary base pairing in the precise replication process of DNA • Recognize the impact of DNA mutations **Module 6: DNA Transcription and Translation** **Describe the conversion of DNA to RNA to proteins** • Outline the process of genetic transcription • Summarize the process of genetic translation • Outline the process of prokaryotic transcription and translation • Identify the central dogma of life
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** Introduction to human biology: History and milestones in the field of human biology Basic concepts of human biology and applications. A blood type (also known as a blood group) is a classification of blood, based on the presence and absence of antibodies and inherited antigenic substances on the surface of red blood cells (RBCs). These antigens may be proteins, carbohydrates, glycoproteins, or glycolipids, depending on the blood group system. DNA as the genetic material because of the apparent simplicity of its chemistry. DNA was known to be a long polymer composed of only four types of subunits, which resemble one another chemically. A DNA molecule consists of two long polynucleotide chains composed of four types of nucleotide subunits. Each of these chains is known as a DNA chain, or

	a DNA strand. Hydrogen bonds between the base portions of the nucleotides hold the two chains together. Chromosomes are thread-like structures present in the nucleus. They are important because they contain the basic genetic material DNA. These are present inside the nucleus of plants as well as animal cells. Chromosomes were first discovered by Strasburger in 1815 and the term 'chromosome' was first used by Waldeyer in 1888. Human beings have 46 chromosomes in their body. These are arranged into 23 pairs. "A Chromosome looks like a thread and is coiled material, made of proteins. Chromosomes are present in the nucleus of all the cells and contain the basic genetic material DNA, which passes from one generation to another". **Structure:** A chromosome has generally 8 parts; Centromere or primary constriction or kinetochore, chromatids, chromatin, secondary constriction, telomere, chromomere, chromonema, and matrix. Centromere or Kinetochore: It is the primary constriction at the center to which the chromatids or spindle fibers are attached. Its function is to enable movement of the chromosome during the anaphase stage of cell division. Chromatid: During cell division, a chromosome is divided into 2 identical half strands joined by a centromere. **Laboratory Skills:** Laboratory technician skills refer to the ability to carry out specialized tasks in a laboratory setting. Laboratory technicians perform specialized scientific tests, often for technical or diagnostic purposes, for which tasks such as hypothesizing, keeping records, dissecting, pipetting, measuring and sterilizing are common. To complete these tasks and others, laboratory technicians need a combination of hard and soft skills to ensure they follow guidelines and produce accurate laboratory results.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching strategies used in general biology and their expected results in terms of acquiring knowledge and achieving learning outcomes for students were as follows: **1. Competitive academic** • Students work individually. • Students have common learning goals and tasks. **2. Individualistic learning** • Students work individually and independently to achieve various individual learning goals and tasks that are not related to other students. **3. Cooperative learning** • Students work in small groups. • Students shared learning objectives and tasks within the group that may be similar or different from other groups. • The professor evaluates the students on their work as groups and also on their individual work

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	65	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	10% (10)	Continuous	All
	Online Assignments	1	5% (5)	Continuous	All
	Lab	1	15% (15)	Continuous	All
	Seminar	1	10% (10)	Continuous	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	4hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and basic principle of human biology
Week 2	Cell: Structure, properties and classification (part 1)
Week 3	Cell: Structure, properties and classification (part2)
Week 4	Tissue: Structure, properties; classification and function(patr1)
Week 5	Tissue: Structure, properties; classification and function(part2)
Week 6	Circulatory system; Blood
Week 7	Skin and Hair
Week 8	Mid exam
Week 9	Structure and Function of DNA
Week 10	Structure and Function of DNA
Week 11	Genetic basis of DNA typing
Week 12	Human chromosomes
Week 13	Chromosomes variations
Week 14	Human genetics and Semi-lethal gene
Week 15	Final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Laboratory safety roles
Week 2	Types of microscopes and Parts of the Microscope
Week 3	Eukaryotic Cell Structure
Week 4	Tissue: classification and function(patr1)
Week 5	Tissue: classification and function(part2)
Week 6	Mid exam
Week 7	Microscopic comparison between eukaryotic and prokaryotic cells
Week 8	DNA Extraction

Week 9	The Cell Cycle & Mitosis, Patterns of Inheritance
Week 10	Explain hematocrit, including the significance of values outside of the normal range
Week 11	Determine hematocrit from a blood sample image.
Week 12	Explain the ABO and Rh blood groups and their clinical significance.
Week 13	Identify and describe all formed elements in a human blood smear. Part 1
Week 14	Identify and describe all formed elements in a human blood smear. Part 2
Week 15	final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Reference book: Johnks and lnglis(eds.) Text book of Human Biology, 3rd Ed.	No (Available as an e-book)
Recommended Texts		
Websites		

APPENDIX:

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	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks 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