	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Advanced Technologies Department of Radiology and Nuclear Medicine Techniques	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Principles of Biology 1			**Module Delivery**	
Module Type	C			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	RSNM100				
ECTS Credits	7.00				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Radiology and Nuclear Medicine		**College**	Advanced Technologies	
Module Leader	Yusor Fadhil Abdulameer		**e-mail**	yusor.fadhil@ouwa.edu.iq	
Module Leader's Acad. Title	Lecturer Dr.		**Module Leader's Qualification**	PhD	
Module Tutor	Yusor Fadhil Abdulameer		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	21/1/2026		**Version Number**	1	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	NA (Biology 1)	**Semester**	1
Co-requisites module	NA	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This course aims to introduce students to the fundamental principles of biology that explain the structure, function, and organization of living systems. It provides a scientific foundation in biological and genetic concepts relevant to medical and health-related disciplines, while developing essential laboratory and analytical skills. The course aims to: • Build a basic understanding of biological and genetic principles. • Explain the relationship between structure and function in living organisms. • Introduce fundamental cellular and genetic processes. • Develop basic laboratory skills and safe experimental practices. • Enhance scientific thinking and biological communication skills. • Prepare students for advanced study in medical and applied sciences.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe the fundamental characteristics and levels of organization of living organisms. 2. Explain the structure and function of major biological molecules and cellular components. 3. Demonstrate understanding of basic biological processes, including metabolism, cell division, and homeostasis. 4. Apply core biological principles to simple medical and health-related scenarios. 5. Explain basic genetic concepts, including DNA structure, genes, chromosomes, and inheritance patterns. 6. Describe the processes of DNA replication, transcription, and translation at an introductory level. 7. Perform basic laboratory techniques safely and accurately. 8. Interpret basic biological and genetic data and experimental results.

	9. Use appropriate biological and genetic terminology in written and oral communication. 10. Recognize the role of genetics in health and disease.
Indicative Contents المحتويات الإرشادية	Introduction to Biology: definition, scope, characteristics of living organisms, levels of organization • Cell theory, cell types, cell membrane, cellular organelles • Enzymes and metabolism: enzyme function, factors affecting activity, basic metabolic pathways • Cell division: mitosis and meiosis (stages and significance) • Basic genetics: DNA structure, genes, chromosomes, inheritance patterns • Molecular genetics: DNA replication, transcription, translation, protein synthesis • Genetic variation and mutation: types and significance • Laboratory biology: safety, microscopy, sample preparation, data interpretation

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The module will be delivered through a combination of the following strategies: • Lectures to introduce core concepts and theories. • Interactive tutorials and problem-solving sessions to reinforce understanding and develop analytical skills. • Laboratory practical to develop experimental skills and apply theoretical knowledge. • Group discussions and case studies to enhance critical thinking and communication. • Self-directed learning through assigned readings and online resources. • Formative assessments (quizzes, assignments) to monitor progress and provide feedback.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	88	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem)	175		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5 % (5)	2,5,8,10,13	LO # 1, 4, 5, 7,8
	Assignments	5	5 % (5)	1,4,7,11,15	LO # 1-15
	Lab.	10	10 % (10)	1-9	LO # 1-15
	Report	10	10 % (10)	1-8	LO # 1-15
Summative assessment	Midterm Exam	3 hr.	20 % (20)	9	LO # 1-15
	Final Exam	3 hr.	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Biology • Scope and importance of biology • Levels of biological organization
Week 2	Cytology 1 cell structure and function { cell cytoplasm, plasma membrane , mitochondria – Mt DNA}
Week 3	Cytology2 { ribosome , endoplasmic reticulum , Golgi complex }
Week 4	Cytology3 {lysosome , cytoskeleton , nucleus}
Week 5	The Charactaristics of Living Things (Organisims) ,Evaluation, Adaptation, Respiration, Homostasis,Metabolism,Anabolism, Catabolism,Respond to stumili,Repruduction
Week 6	Cell cycle / mitosis • Phases of the cell cycle • Stages of mitosis • Biological significance of mitosis
Week 7	Cell cycle / meiosis • Stages of meiosis I • Stages of meiosis II • Genetic variation • Biological significance of meiosis
Week 8	Genetics / Gene and chromosome • Concept of the gene • Structure and function of chromosomes
Week 9	DNA replication , Transcription , Translation
Week 10	Blood Groups • ABO blood group system • Rh factor • Medical importance of blood groups
Week 11	Cancers cells • Characteristics of cancer cells • Causes of cancer development • Differences between normal and cancerous cells

Week 12	Stem cells • Types of stem cells • Characteristics and differentiation potential • Medical applications
Week 13	Mutations • Types of mutations • Causes of mutations • Genetic and medical effects
Week 14	Genetic engineering • Principles of genetic engineering • Basic techniques • Medical and biotechnological applications
Week 15	Evolution •Theories of evolution • Natural selection • Importance of evolution in biology

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Laboratory safety, PPE, Biohazard signs
Week 2	Microscopic • Parts of the light microscope • Proper use of the microscope
Week 3	Cytology 1 • Study of cell structure under the microscope
Week 4	Cytology 2 • Study of cellular organelles
Week 5	Slide of mitosis • Identification of the stages of mitosis
Week 6	Slides of meiosis • Identification of the stages of meiosis
Week 7	Buccal smear • Preparation and examination of buccal epithelial cells
Week 8	Inherited disease –Klinefelte syndrome and Turner syndrome
Week 9	Inherited disease down syndrome
Week 10	Identification of blood groups • ABO blood group system • Rh factor
Week 11	Classification of cancer cells • Identification of different types of cancer cells
Week 12	Pedigree analysis • Analysis of inheritance patterns
Week 13	Karyotyping • Chromosome analysis • Detection of chromosomal abnormalities
Week 14	Hardy–Weinberg • Application of the Hardy–Weinberg equilibrium
Week 15	Review • Comprehensive review of laboratory experiments

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	• Biology – by Neil A. Campbell, Jane B. Reece. • Molecular Biology of the Cell – by Bruce Alberts et al.	

	• Cell Biology – by Thomas D. Pollard, William C. Earnshaw.	

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.

رئيس القسم

م.د. يسر فاضل عبد الامير

التاريخ :

استاذ المادة

م.د. يسر فاضل عبد الامير

التاريخ: