
	<p>Ministry of Higher Education and Scientific Research - Iraq</p> <p>University of Warithe Al_Anbiyaa Engineering College</p> <p>Biomedical Engineering Department</p>	
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Module Information			
معلومات المادة الدراسية			
Module Title	Cell Biology		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	BME-212		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	1
Administering Department	Type Dept. Code	College	engineering
Module Leader	Aref alsayad		e-mail aref.alsayad@uowa.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)		e-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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	<ol style="list-style-type: none">1. To know the cell number, size, shape, and properties of cells and distinguish their characteristics.2. To understand Chromosomes and Genes, Structure of a Chromosome3. This course deals with the basic concept of Muscle tissue.4. This is the basic subject for all body tissues.5. To develop skills Dealing Structure of the Cell and Cell Organelles.6. To Know the types of microscopes used in diagnosis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw a conclusion.2. An ability to communicate effectively with a range of audiences.3. An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Cell Division (Mitosis and Miosis) , Prophase, Metaphase, Anaphase, Telophase , Reduction or Maturation Division (Meiosis) [12 hrs]</p> <p>cartilage, hyaline, elastic and fibrocartilage, histogenesis of cartilage ,Bone- cells, matrix, types of bones, bone histogenesis ,blood, cells, formed elements, hematopoiesis, stem cells, bone marrow, maturation of erythrocytes, maturation of granulocytes, maturation of lymphocytes and monocytes, origin of platelets [12 hrs]</p> <p>Genetics (The Science of Heredity) Genes, Chromosomes, and the Genome , The Allele , Dominance, Recessiveness, and Codominance , Phenotype and Genotype , The Mendelian Rules , Autosomal Dominant Hereditary Transmission , Sex-linked Inheritance. [12 hrs]</p> <p>Exchange of Materials between the Cell and Its Environment Composition of the , Extracellular Fluid , Composition of the Intracellular Fluid , Membrane or Resting Potential of a Cell , Solid and Fluid TransportRenal system , reproductive systems. [20 hrs]</p>

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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' Structure of the Cell and Cell Organelles and laboratory technique, This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of cell Number, Size, Shape, and Properties of Cells , Metabolism and the Generation of Energy , Reproduction and Life Expectancy , Sensitivity to Stimulation and Response to Stimulation
Week 2	Structure of the Cell and Cell Organelles , Cell Membrane , Cytoplasm and Cell Organelles, Endoplasmic Reticulum (ER) , Ribosomes, Golgi Apparatus
Week 3	Lysosomes , Centrioles , Mitochondria , The Cell Nucleus
Week 4	Chromosomes and Genes, Structure of a Chromosome , The Genetic Code , Protein Synthesis , Duplication of Genetic Material (Replication)
Week 5	Cell Division (Mitosis and Miosis) , Prophase, Metaphase, Anaphase, Telophase , Reduction or Maturation Division (Meiosis)
Week 6	First maturation division , Second maturation division , The result of the two maturation divisions = mature sex cells , Prophase II , Metaphase II , Anaphase II , Telophase II
Week 7	Mid-term Exam
Week 8	Exchange of Materials between the Cell and Its Environment Composition of the , Extracellular Fluid , Composition of the Intracellular Fluid , Membrane or Resting Potential of a Cel , Solid and Fluid Transport
Week 9	Diffusion , Osmosis and Osmotic Pressure , Filtration , Active Transport , Endocytosis and Exocytosis
Week 10	Genetics (The Science of Heredity) Genes, Chromosomes, and the Genome , The Allele , Dominance, Recessiveness, and Codominance , Phenotype and Genotype , The Mendelian Rules , Autosomal Dominant Hereditary Transmission , Sex-linked Inheritance
Week 11	X Chromosome-linked Dominant Inheritance , X Chromosome-linked Recessive Inheritance , Mutations , Gene Mutations , Chromosome Mutations , Genome Mutations
Week 12	Epithelial Tissue and connective tissue , Surface Epithelia , Cell Junctions , Glandular and Sensory Epithelia , Simple epithelial tissue , Stratified tissue , Shape of epithelial tissue , Connective tissue Function , Connective Tissue Cells
Week 13	Intercellular Matrix (Ground Substance) , Loose Areolar (Interstitial) Tissue , Dense Fibrous White Connective Tissue , Adipose (Fatty) Tissue , Cartilaginous Tissue , Bone Tissue
Week 14	Nervous and Muscles tissue , Smooth Muscle Tissue , Striated Muscle Tissue , Cardiac Muscle Tissue
Week 15	The Neuron , The Nerve Impulse (Action Potential) , The Synapse , The Glia Cells (Neuroglia)
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Cytology (7 th editions) by Silva Anderus A L (ed.).	Yes
Recommended Texts	Human Biology (6 th editions), by John Recharged	yes
Websites	https://libgen.me/book/ed0b6954e2617c88bdd0e1a8d335eaf7	

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.