

	<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

<b>Module Aims, Learning Outcomes and Indicative Contents</b> <b>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</b>	
<b>Module Aims</b> <b>أهداف المادة الدراسية</b>	<ol style="list-style-type: none"> <li>1. To know the cell number, size, shape, and properties of cells and distinguish their characteristics.</li> <li>2. To understand Chromosomes and Genes, Structure of a Chromosome</li> <li>3. This course deals with the basic concept of Muscle tissue.</li> <li>4. This is the basic subject for all body tissues.</li> <li>5. To develop skills Dealing Structure of the Cell and Cell Organelles.</li> <li>6. To Know the types of microscopes used in diagnosis.</li> </ol>
<b>Module Learning Outcomes</b> <b>مخرجات التعلم للمادة الدراسية</b>	<ol style="list-style-type: none"> <li>1. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw a conclusion.</li> <li>2. An ability to communicate effectively with a range of audiences.</li> <li>3. An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge</li> </ol>
<b>Indicative Contents</b> <b>المحتويات الإرشادية</b>	<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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<h3 style="text-align: center;">Learning and Teaching Strategies</h3> <h4 style="text-align: center;">استراتيجيات التعلم والتعليم</h4>	
<b>Strategies</b>	<p>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.</p>

<h3 style="text-align: center;">Student Workload (SWL)</h3> <h4 style="text-align: center;">الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً</h4>				
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	48	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	4	
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	4	
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	100			

<h3 style="text-align: center;">Module Evaluation</h3> <h4 style="text-align: center;">تقييم المادة الدراسية</h4>					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	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
<b>Summative assessment</b>	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## Delivery Plan (Weekly Syllabus)

### المنهج الاسبوعي النظري

	<b>Material Covered</b>
<b>Week 1</b>	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
<b>Week 2</b>	Structure of the Cell and Cell Organelles , Cell Membrane , Cytoplasm and Cell Organelles, Endoplasmic Reticulum (ER) , Ribosomes, Golgi Apparatus
<b>Week 3</b>	Lysosomes , Centrioles , Mitochondria , The Cell Nucleus
<b>Week 4</b>	Chromosomes and Genes, Structure of a Chromosome , The Genetic Code , Protein Synthesis , Duplication of Genetic Material (Replication)
<b>Week 5</b>	Cell Division (Mitosis and Miosis) , Prophase, Metaphase, Anaphase, Telophase , Reduction or Maturation Division (Meiosis)
<b>Week 6</b>	First maturation division , Second maturation division , The result of the two maturation divisions = mature sex cells , Prophase II , Metaphase II , Anaphase II , Telophase II
<b>Week 7</b>	Mid-term Exam
<b>Week 8</b>	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
<b>Week 9</b>	Diffusion , Osmosis and Osmotic Pressure , Filtration , Active Transport , Endocytosis and Exocytosis
<b>Week 10</b>	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
<b>Week 11</b>	X Chromosome-linked Dominant Inheritance , X Chromosome-linked Recessive Inheritance , Mutations , Gene Mutations , Chromosome Mutations , Genome Mutations
<b>Week 12</b>	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
<b>Week 13</b>	Intercellular Matrix (Ground Substance) , Loose Areolar (Interstitial) Tissue , Dense Fibrous White Connective Tissue , Adipose (Fatty) Tissue , Cartilaginous Tissue , Bone Tissue
<b>Week 14</b>	Nervous and Muscles tissue , Smooth Muscle Tissue , Striated Muscle Tissue , Cardiac Muscle Tissue
<b>Week 15</b>	The Neuron , The Nerve Impulse (Action Potential) , The Synapse , The Glia Cells (Neuroglia)
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

## Learning and Teaching Resources

### مصادر التعلم والتدريس

		Text	Available in the Library?
<b>Required Texts</b>		Cytology (7 <sup>th</sup> editions) by Silva Anderus A L (ed.).	
<b>Recommended Texts</b>		Human Biology (6 <sup>th</sup> editions), by John Recharged	
<b>Websites</b>		<a href="https://libgen.me/book/ed0b6954e2617c88bdd0e1a8d335eaf7">https://libgen.me/book/ed0b6954e2617c88bdd0e1a8d335eaf7</a>	

## Grading Scheme

### مخطط الدرجات

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