MODULE DESCRIPTION FORM

Module Information					
Module Title	**General Biology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MPH103**				
ECTS Credits	**9**				
SWL (hr/sem)	**225**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Medical Physics		**College**	College of Sciences	
Module Leader	Dhurgham Adel Obaid		**e-mail**	dirgham.ad@uowa.edu.iq	
Module Leader's Acad. Title	Assist Lecturer		**Module Leader's Qualification**	MSc in Biology	
Module Tutor	Mohammed Abd Ali Hamza		**e-mail**	mohammed.ab@uowa.edu.iq	
Peer Reviewer Name	Zainab Abdul Elah Abbas		**e-mail**	zaineb.a@uowa.edu.iq	
Scientific Committee Approval Date	2025-12-20		**Version Number**	V 1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	/
Co-requisites module	None	**Semester**	/

Department Head Approval

Dean of the College Approval

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. To understand voltage, current and power from a given circuit. 3. This course deals with the basic concept of electrical circuits. 4. This is the basic subject for all electrical and electronic circuits. 5. To understand Kirchhoff's current and voltage Laws problems. 6. To perform mesh and Nodal analysis.
Module Learning Outcomes	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Discuss the reaction and involvement of atoms in electric circuits. 5. Describe electrical power, charge, and current. 6. Define Ohm's law. 7. Identify the basic circuit elements and their applications. 8. Discuss the operations of sinusoid and phasors in an electric circuit. 9. Discuss the various properties of resistors, capacitors, and inductors. 10. Explain the two Kirchoff's laws used in circuit analysis. 11. Identify the capacitor and inductor phasor relationship with respect to voltage and current.
Indicative Contents	Indicative content includes the following. <u>Part A - Circuit Theory</u> DC circuits – Current and voltage definitions, Passive sign convention and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law. Anatomy of a circuit, Network reduction, Introduction to mesh and nodal analysis. [SSWL=15 hrs] AC circuits I – Time dependent signals, average and RMS values. Capacitance and inductance, energy storage elements, simple AC steady-state sinusoidal analysis. [15 hrs] AC Circuits II - Phasor diagrams, definition of complex impedance, AC circuit analysis with complex numbers. [SSWL=10 hrs] RL, RC and RLC circuits - Frequency response of RLC circuits, simple filter and band-

	pass circuits, resonance and Q-factor, use of Bode plots, use of differential equations and their solutions. Time response (natural and step responses). Introduction to second order circuits. [SSWL=15 hrs] Revision problem classes [SSWL=6 hrs] Part B - Analogue Electronics Fundamentals Resistive networks, voltage and current sources, Thevenin and Norton equivalent circuits, current and voltage division, input resistance, output resistance, coupling and decoupling capacitors, maximum power transfer, RMS and power dissipation, current limiting and over voltage protection. [SSWL=15 hrs] Components and active devices – Components vs elements and circuit modeling, real and ideal elements. Introduction to sensors and actuators, self-generating vs modulating type sensors, simple circuit interfacing. [SSWL=14 hrs] Diodes and Diode circuits – Diode characteristics and equations, ideal vs real. Signal conditioning, clamping and clipping, rectification and peak detection, photodiodes, LEDs, Zener diodes, voltage stabilization, voltage reference, power supplies. [SSWL=15 hrs] Total hrs = 105 = SSWL - (Exam hrs) = 109 - 4 = 105 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
Structured SWL (h/sem)	90 hrs	**Structured SWL (h/w)**	6 hr.
Unstructured SWL (h/sem)	132 hrs.	**Unstructured SWL (h/w)**	9 hrs.
Total SWL (h/sem)	222+ 3 final =225 hrs.		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	8% (2)	2,8,13	3,5,6,7,8,11
	Lab	4	8% (2)	4,6,7,12	3,5,8,11
	Online assignments	4	8% (2)	1,6,9,10	4,7,8,11
	Report	10	10% (1)	4,5,6,7,8,9, 10,12,13	1-12
	Seminar	2	6% (3)	All Weeks	1-12
Summative assessment	Midterm Exam	1hr	10% (10)	7	1 - 7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Biology
Week 2	Cell Structure
Week 3	Cytoplasmic membrane
Week 4	Organic Compounds a. Carbohydrates b. Lipids c. Proteins d. Nucleic Acids
Week 5	Energy and Metabolism
Week 6	DNA: The Genetic Material
Week 7	The Chromosomal Basis of Inheritance
Week 8	How Cells Divide + Midterm
Week 9	Tissues, bone and cartilages
Week 10	Plant tissues and organs
Week 11	Photosynthesis
Week 12	Prokaryotes and Viruses
Week 13	Anatomy of bacteria: Surface appendages, Capsule.
Week 14	Cell wall of G.+ve & G –ve bacteria.
Week 15	Protists and Fungi
Week 16	Final exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Orientation to the laboratory. Rules of conduct and general safety.
Week 2	Microscope & cell structure
Week 3	Cells : Prokaryotic Cells and Eukaryotic Cells
Week 4	Plant Cells, and Animal Cells
Week 5	Mitosis and Meiosis
Week 6	Animal Cell Culture
Week 7	The tissues (Single epithelial tissue)
Week 8	Plant tissue under microscope
Week 9	Plant Cell Culture
Week 10	Aseptic procedures ,culture media and habitat of microbiology
Week 11	Isolation and preparation of pure culture bacteria and fungi
Week 12	Microscopic examination and general morphology of fungi
Week 13	Bacterial smear preparation
Week14-15	Simple staining of bacteria (Gram staining).
Week 16	Final exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Mader, S. S. (2004). **Human biology**. *(No Title)*. Lowe, J. S., & Anderson, P. G. (2014). *Stevens & Lowe's* ***Human Histology*** *E-Book: With STUDENT CONSULT Online Access*. Elsevier Health Sciences. Weaver, R. (2011). *EBOOK:* ***Molecular Biology***. McGraw Hill. Alberts, B., Hopkin, K., Johnson, A. D., Morgan, D., Raff, M., Roberts, K., & Walter, P. (2018). ***Essential cell biology: Fifth international student edition***. WW Norton & Company. Jawetz, M., Melinck, J., Adberg, E. A., Broks, G. O., Butel, J. S., & Ornston, N. L. (2012). **Medical Microbiology** 25.	Yes
Recommended Texts	Davis, J. (Ed.). (2011). ***Animal Cell Culture***. Wiley-Blackwell..	No

Websites	N/A

Grading Scheme				
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.