MODULE DESCRIPTOR FORM

Module Information					
Module Title	GENERAL BIOLOGY			**Module Delivery**	
Module Type	CORE			☒ **Lecture** ☒ **Practical**	
Module Code	FOR11001				
ECTS Credits	6				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Forensic evidence		**College**	College of Sciences	
Module Leader	Mohammed Abdali Hamza		**e-mail**	mohammed.ab@uowa.edu.iq	
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**	MSc	
Module Tutor	Mohammed Abdali Hamza		**e-mail**	mohammed.ab@uowa.edu.iq	
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Review Committee Approval	2025-12-20		**Version Number**	V 1.0	

Relation With Other Modules			
Prerequisite module	No	**Semester**	-
Co-requisites module	No	**Semester**	-

Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	This course introduces the biological principles fundamental to forensic science. It covers cell biology, genetics, molecular biology, human anatomy, microbiology, and biochemistry, emphasizing how biological evidence contributes to forensic investigations such as DNA profiling, blood typing, and crime scene analysis.
Module Learning Outcomes	• Understand the structure and function of biological systems relevant to forensic applications. • Explain the principles of DNA, genetics, and molecular biology as used in forensic identification. • Describe biological evidence and its interpretation in crime scene investigation. • Recognize the importance of biological safety and ethics in forensic laboratories.
Indicative Contents	

Learning and Teaching Strategies	
Strategies	The ability to: - identify problems, make predictions, develop hypotheses and devise means of carrying out investigations to test the hypotheses; - plan and execute experimental procedures and operations in an appropriate sequence; - use experimental controls where appropriate; - modify an original plan or sequence of operations as a result of difficulties encountered in carrying out experiments or obtaining unexpected results; - take into account possible sources of errors and danger in the design of an experiment; - select and use appropriate equipment and techniques.

Student Workload (SWL)			
Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	97	**Unstructured SWL (h/w)**	6.5
Total SWL (h/sem)	175		

Module Evaluation								
		Time/Number		Weight (Marks)		Week Due	Relevant Learning Outcome
		TH	LAB	TH	LAB		
Formative assessment	**Quizzes**	2	2	4	10	**1**5 and 1	3,7
	Homework assignment	2	1	4	10	6and 13	1,8
	Onsite Assignments	-	-	-	-	Continuous	All
	Projects	1	7	2	10	14	All
Summative assessment	**Midterm Exam**	1		10		7	
	Final Exam	3hr		50		15	
Total assessment				100 Marks			

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	**Lecture 1 – Introduction to Biology and Forensic Science** Scope and branches of biology; Relationship between biology and forensic science; Biological evidence types (blood, hair, saliva, semen, tissues).
Week 2	**Lecture 2 – The Cell: Structure and Function** Cell theory and organization; Prokaryotic vs. eukaryotic cells; Organelle functions and forensic relevance (nucleus, mitochondria).
Week 3	**Lecture 3 – Biological Molecules** Proteins, carbohydrates, lipids, nucleic acids; Molecular composition of biological evidence; Role of DNA and proteins in identification.
Week 4	**Lecture 4 – Microscopy and Cellular Observation** Light and electron microscopy principles; Sample preparation and staining techniques; Microscopy applications in forensic biology.
Week 5	**Lecture 5 – Cell Division and Reproduction** Mitosis and meiosis; Chromosomal structure and abnormalities; Forensic implications in paternity and kinship testing.
Week 6	**Lecture 6 – Basic Genetics** Mendelian genetics: laws of inheritance; Genotypes, phenotypes, alleles; Applications in paternity testing and population studies.
Week 7	**Lecture 7 – DNA Structure and Function** Structure of DNA and RNA; DNA replication, transcription, translation overview; DNA as a molecular marker in forensic identification.
Week 8	**Lecture 8 – Human Anatomy and Physiology Overview** Basic organization of the human body; Circulatory, respiratory, excretory, and nervous systems; Importance of anatomical knowledge in forensic analysis.
Week 9	**Lecture 9 – Blood and Body Fluids** Composition and function of blood; Blood typing and serology; Identification of biological stains in forensic investigations.
Week 10	**Lecture 10 – Introduction to Microbiology** Classification of microorganisms; Bacteria, fungi, and viruses in forensic contexts; Role of microbes in decomposition and post-mortem interval estimation.
Week 11	**Lecture 11 – Enzymes and Metabolism**Enzyme structure, function, and kinetics; Metabolic pathways overview; Enzymatic markers in forensic toxicology and tissue identification.
Week 12	**Lecture 12 – Introduction to Immunology**Immune system components; Antigen-antibody interactions; Applications in forensic serology and immunoassays.
Week 13	**Lecture 13 – Forensic Serology**Body fluid identification (blood, saliva, semen); Presumptive and confirmatory tests; Forensic relevance in sexual assault and violent crime cases.
Week 14	**Lecture 14 – Biological Evidence Handling and Preservation**Collection, packaging, and storage of biological samples; Avoiding contamination; Chain of custody and legal considerations.
Week 15	**Lecture 15 – Applied Forensic Biology and Case Studies**Real-world applications of biological evidence; Review of famous forensic cases involving DNA and serology; Ethical and professional issues in forensic biology.

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
Week 14	Simple staining of bacteria (Gram staining).
Week 15	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	
Recommended Texts	• Saferstein, R. Criminalistics: An Introduction to Forensic Science. Pearson. • Houck, M. & Siegel, J. Fundamentals of Forensic Science. Academic Press. • Butler, J. Forensic DNA Typing: Biology, Technology, and Genetics of STR Markers. Elsevier. Alberts, B. Molecular Biology of the Cell. Garland Science.	
Websites		

GRADING SCHEME				
Group	**Grade**	**Mark**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(0-44)	Considerable amount of work required
	Note:			

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.