Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Al Muthanna University

Faculty/Institute: College of Applied Medical sciences

Scientific Department: Pathological Analyses Department

Academic or Professional Program Name: B.Sc. (Pathological Analyses)

Final Certificate Name: B.Sc. in Pathological Analyses

Academic System: The Bologna Process

Description Preparation Date: 1/12/2025

File Completion Date: 1/12/2025

Signature: Signature:

Head of Department Name: Huda Raheem Scientific Associate Name:

Date: 15/2/2026 Date: 15/2/2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department: Iqbal Kareem

Date: 15/2/2026

Signature:

Approved

Approval of the Dean

2026/2/22

1. Program Vision

• Excellence in education and laboratory applications to prepare qualified personnel capable of supporting the healthcare system.
• Providing high-quality diagnostic services according to modern standards.

2. Program Mission

• Providing high-quality laboratory education that keeps pace with scientific advancements.
• Preparing qualified graduates with practical diagnostic skills and the knowledge required to serve the community.

3. Program Objectives

1. To prepare laboratory personnel with precise diagnostic skills using modern technologies.
2. To enhance students' scientific capabilities through theoretical, practical, and research-based education.
3. To provide healthcare institutions with graduates capable of applying laboratory standards and improving the quality of healthcare services.

4. Program Accreditation

5. Other external influences

Ministry of Higher Education and Scientific Research

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	19	7.9 %	

Republic of Iraq - Ministry of Higher Education and Scientific Research

University of Al-Muthanna

Bachelor's degree in pathological analyses (First cycle)

Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25hr

Program Curriculum (2025 - 2026)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي

جامعة المثنى

بكالوريوس في التحليلات المرضية (الدورة الأولى)

أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة

المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	One	1	AMS 003	Medical Physics	فيزياء طبيه	English	2		2		1		3	78	97	175	7.00	B	
		2	AMS 002	Analytical Chemistry	كيمياء تحليليه	English	2		2		1		3	78	97	175	7.00	B	
		3	AMS 001	General Biology	علم الأحياء العام	English	2		2		1		3	78	147	225	9.00	B	
		4	UNI 103	Human Rights and Democracy	حقوق الانسان والديمقراطية	Arabic	2						3	33	17	50	2.00	S	
		5	UNI105	Computer I	الحاسبات I	English	1		2				3	48	27	75	3.00	S	
		6	UNI003	Arabic Language I	اللغة العربية I	Arabic	2						3	33	17	50	2.00	S	
				مجموع الساعات الاسبوعية	22	Total	11	0	8	0	3	0	18	348	402	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Two	1	AMS 004	Human Cytology	علم الخلايا البشري	English	2		2		1		3	78	97	175	7.00	B	
		2	PAA1201	Principle of Pathological Analyses	اساسيات التحليلات المرضية	English	2		2		1		3	78	72	150	6.00	C	
		3	PAA1202	Human Anatomy	علم التشريح البشري	English	2		2		1		3	78	97	175	7.00	B	
		4	PAA1203	Principles of Microbiology	مبادىء علم الاحياء الدقيقه	English	2		2		1		3	78	72	150	6.00	C	
		5	PAA1204	Medical Terminology	المصطلحات الطبيه	English	1				1		3	33	17	50	2.00	B	
		6	UNI102	English language I	اللغة الانكليزية	English	2						3	33	17	50	2.00	S	
				مجموع الساعات الاسبوعية	24	Total	11	0	8	0	5	0	18	378	372	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Three	1	PAA2305	Principle of Physiology	اساسيات علم وظائف الاعضاء البشريه	English	2		2		1		3	78	97	175	7.00	C	
		2	AMS 005	Biochemistry	الكيمياء الحياتيه	English	2		2	1	1		3	93	57	150	6.00	B	
		3	PAA2306	Parasitic Protozoa	الاوليات الطفيليه	English	2		2	1	1		3	93	82	175	7.00	C	
		4	PAA2307	Occupational Laboratory Safety	السلامه المختبريه المهنيه	English	2				1		3	48	102	150	6.00	C	
		5	UNI002	English language II	اللغة الانكليزية II	English	1				1		3	33	17	50	2.00	S	
		6	UNI0010	The crimes of the Baath regime	جرائم نظام البعث	Arabic	2						3	33	17	50	2.00	S	
				مجموع الساعات الاسبوعية	24	Total	11	0	8	2	5	0	18	378	372	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGII	Four	1	PAA2408	Human Histology	علم الانسجه البشري	English	2		2		1		3	78	22	100	4.00	C	
		2	PAA2409	Medical physiology	علم وظائف الاعضاء الطبي	English	2		2		1		3	78	47	125	5.00	C	
		3	AMS 009	Bactenology	علم البكتيريا	English	2		2	1			3	78	47	125	5.00	C	
		4	PAA2410	Parasitic Helminathes	الديدان الطفيليه	English	2		2	1			3	78	47	125	5.00	C	
		5	AMS 006	Medical Virology	علم الفايروسات الطبيه	English	2		2				3	63	87	150	6.00	C	
		6	UNI011	Arabic Language II	اللغة العربية II	Arabic	2						3	33	17	50	2.00	S	
		7	UNI005	Computer II	الحاسبات II	English	1		2				3	48	27	75	3.00	S	
				مجموع الساعات الاسبوعية	24	Total	13	0	12	2	2	0	21	456	294	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Five	1	AMS [illegible]	Principle of Immunology	علم المناعة	English	2		2	1			3	78	72	150	6.00	C	
		2	AMS [illegible]	Medical Molecular Biology	[illegible] الجزيئيه الطبية	English	2		2		1		3	78	47	125	5.00	B	
		3	PAA [illegible]	Pathological Analyses	[illegible] المرضية	English	2		2	1			3	78	47	125	5.00		
		4	PAA [illegible]	Microbial Diagnosis	[illegible] ميكروبي	English	2		2		1		3	78	47	125	5.00	C	

	5	PAA3513	Research Methodology	منهج بحث	English	1				1		3	33	42	75	3.00	S		
	6	PAA3514	Clinical Chemistry I	الكيمياء السريريه I	English	2		2		1		3	78	72	150	6.00	C		
			مجموع الساعات الاسبوعية	27	Total	11	0	10	2	4	0	18	423	327	750	30.00			

UGIII	Semester	No.	Module Code	Module Name In English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Six	1	PAA3616	Medical Genetics	الوراثه الطبية	English	2		2		1		3	78	47	125	5.00	C	
		2	PAA3617	Pathology	علم الامراض	English	2		2		1		3	78	22	100	4.00	C	
		3	PAA3618	Clinical Chemistry II	الكيمياء السريريه II	English	2		2		1		3	78	47	125	5.00	C	
		4	PAA3619	Serology	علم المصول	English	2		2	1			3	78	47	125	5.00	C	
		5	AMS-007	Biostatisics	الاحصاء الحيوي	Arabic	2						3	33	42	75	3.00	B	
		6	PAA3620	Medical Mycology	علم الفطريات الطبيه	English	2		2				3	63	62	125	5.00	C	
		7	UNI007	Ethics	اخلاقيات المهنة	Arabic	1						3	18	57	75	3.00	B	
				مجموع الساعات الاسبوعية	27	Total	13	0	10	1	3	0	21	426	324	750	30.00		

Level	Semester	No.	Module Code	Module Name In English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGIV	Seven	1	PAA4721	Clinical Bactenology	علم البكتريا السريري	English	2		2	1			3	78	47	125	5.00	C	
		2	PAA4722	Toxicology	علم السموم	English	2		2		1		3	78	47	125	5.00	C	
		3	PAA4723	Clinical Immunology	علم المناعه السريريه	English	2		2	1			3	78	72	150	6.00	C	
		4	PAA4724	Medical Biotechnology	التقنيات الاحيائية الطبية	English	2		2		1		3	78	47	125	5.00	C	
		5	AMS-0011	Research Project I	مشروع بحث تخرج I	English	2						3	33	42	75	3.00	C	
		6	PAA4725	Hematology	علم امراض الدم	English	2		2	1			3	78	72	150	6.00	C	
				مجموع الساعات الاسبوعية	27	Total	12	0	10	3	2	0	18	423	327	750	30.00		

	Semester	No.	Module Code	Module Name In English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGIV	Eight	1	PAA4826	Genetic Engineering	الهندسة الوراثة	English	2		2	1			3	78	72	150	6.00	C	
		2	PAA4827	Epidemiology	علم الأوبئة	English	2		2	1			3	78	72	150	6.00	C	
		3	PAA4828	Clinical Hematology	علم امراض الدم السريرية	English	2		2	1			3	78	72	150	6.00	C	
			PAA4729	Endocrinology	علم الغدد الصماء	English	2		2		1		3	78	22	100	4.00	C	
		5	AMS-0012	Research Project II	مشروع بحث التخرج II	English	2						3	33	42	75	3.00	C	
		6	PAA4830	Antibiotics	المضادات الحيوية	English	2		2		1		3	78	47	125	5.00	C	
				مجموع الساعات الاسبوعية	27	Total	12	0	10	3	2	0	18	423	327	750	30.0		
						Total	94	0	74	13	26	0	150	3255	2745	6000	240		Must be 240 ECTS

Note. The student should complete 4 weeks of Summer Internships to fulfil the requirements of the Bachelor's degree

Structured SWL (hr/w) type		
CL	Class Lecture	
Lab	Laboratory	
Pr	Practical Training	
Tut	Tutorial	
Lect	Online lecture	
Semn	Seminar	

Module type	
B	Basic learning activities
C	Core learning activity
S	Suport or related learning activity
E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

Note: Columns O, Q and R are progrmaed, protected and should not be edited

College Requirements	10	56	23.33 %	
Department Requirements	31	165	68.75 %	
Summer Training				
Other				

° This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Year 1/ Level 1	AMS 003	Medical Physics	3	2
	AMS 002	Analytical Chemistry	3	2
	AMS 001	General Biology	3	2
	UNI 103	Human Rights and Democracy	2	-
	UNI105	Computer I	1	2
	UNI003	Arabic Language	2	-
Year 1/ Level 2	AMS 004	Human Cytology	3	2
	PAA1201	Principle of Pathological Analyses	3	2
	PAA1202	Human Anatomy	3	2
	PAA1203	Principles of Microbiology	3	2
	PAA1204	Medical Terminology	2	-
	UNI102	English languge I	2	-
Year 2/ Level 1	PAA2305	Principle of Physiology	3	2
	AMS 005	Biochemistry	3	2
	PAA2306	Parasitic Protozoa	3	2
	PAA2307	Occupational Laboratory Safety	3	-
	UNI002	English language II	2	-
	UNI0010	The crimes of the Baath regime	2	-
Year 2/ Level 2	PAA2408	Human Histology	3	2
	PAA2409	Medical physiology	3	2
	AMS 009	Bacteriology	2	2
	PAA2410	Parasitic Helminathes	2	2
	AMS 006	Medical Virology	2	2
	UNI005	Computer II	1	2
Year 3/ Level 1	AMS 008	principle of Immunology	2	2
	AMS 0010	Medical Molecular Biology	3	2

	PAA3511	Pathological Analyses	2	2
	PAA3512	Microbial Diagnosis	3	2
	PAA3513	Research Methodology	2	-
	PAA3514	Clinical Chemistry I	3	2
Year 3/ Level 2	PAA3616	Medical Genetics	3	2
	PAA3617	Pathology	3	2
	PAA3618	Clinical Chemistry II	3	2
	PAA3619	Serology	2	2
	AMS-007	Biostatisics	2	-
	PAA3620	Medical Mycology	2	2
	UNI007	Ethics	1	-
Year 4/ Level 1	PAA4721	Clinical Bacteriology	2	2
	PAA4722	Toxicology	3	2
	PAA4723	Clinical Immunology	2	2
	PAA4724	Medical Biotechnology	3	2
	AMS-0011	Research Project I	2	-
	PAA4725	Hematology	2	2
Year 4/ Level 2	PAA4826	Genetic Engineering	2	2
	PAA4827	Epidemiology	2	2
	PAA4828	Clinical Hematology	2	2
	PAA4729	Endocrinology	3	2
	AMS-0012	Research Project II	2	-
	PAA4830	Antibiotics	3	2

8. Expected learning outcomes of the program

Knowledge	
1. Understanding the fundamentals of pathological laboratory sciences, including biochemistry, microbiology, hematology, and clinical immunology.	1. The graduate can interpret laboratory results according to scientific principles.
2. Familiarity with the scientific principles of laboratory equipment and tests, and knowledge of safety protocols in medical laboratories.	2. The graduate can distinguish between different types of tests and understand their clinical applications.
3. Familiarity with computer basics, medical English, and medical terminology used in medical and laboratory sciences.	3. The student can use a computer, read English medical sources, and understand medical terminology in scientific and laboratory communication.

4. Understanding Arabic grammar, the historical crimes of the Ba'ath regime, and the fundamental principles of human rights.	4. The student can write academic texts in Arabic, interpret historical events, and apply human rights principles in evaluating practices and behaviors.
Skills	
1. Perform basic laboratory tests accurately and efficiently.	1. Can perform laboratory tests accurately and efficiently according to standard procedures.
2. Use laboratory equipment and handle samples correctly.	2. Uses modern laboratory equipment safely and applies quality control standards to ensure accurate results. Interprets and documents preliminary results correctly.
3. Scientific presentation and communication: Prepare and deliver a well-organized PowerPoint presentation based on reliable sources, with the ability to clearly convey information to an audience.	3. Can deliver a comprehensive scientific presentation, clearly explain key concepts, and confidently and professionally engage with questions and discussions.
Ethics	
1. Adherence to professional ethics and occupational safety and health standards.	1. Maintains the confidentiality of laboratory information and data and adheres to occupational safety regulations.
2. Promoting the values of cooperation, teamwork, and discipline in laboratory work.	2. Works effectively within a multidisciplinary team and demonstrates responsible professional conduct.

9. Teaching and Learning Strategies

1. Explaining the subject matter to students in detail.
2. Practical learning in laboratories to develop applied skills and enhance understanding.
3. Problem-based learning (PBL) to develop analytical thinking and connect knowledge to application.

10. Evaluation methods

1. Theoretical Assessment: Written exams to measure knowledge and understanding.
2. Practical Assessment: Monitoring student performance in the laboratory and ensuring accurate and safe execution of tests.
3. Ongoing Assessment: Assignments, projects, and class participation.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Nawar Jasim Hussein (Professor)	Microbiology	Virology			√	
Mohanned Abdul Hussein Hamza (Professor)	Parasitology	Veterinary Parasitology			√	
[illegible] Hashim [illegible]	Biological Sciences	Environment and pollution			√	
Dhifaf Jabbar Shamran (Assistant Prof)	Biological Sciences	Genetic engineering and biotechnology			√	
Areej Shakeer Jassum (Lecturer)	Biological Sciences	Animal physiology			√	
Haider Abd al Amir Abdul Hadi (Lecturer)	Chemistry	Analytical Chemistry			√	
Ghina Hamoodi Hussein (Lecturer)	Sciences	Animal physiology			√	
Sarah Zghair Hussein (Lecturer)	Biological Sciences	Microbiology			√	
[illegible] Khlaid Moaan (Assistant Lect.)	Biological Sciences	Microbiology			√	
Zahraa Ibrhim Raof (Assistant Lect.)	Arbic	literature			√	
Bushra Hussein Alwan (Assistant Lect.)	Biological Sciences	Microbiology			√	
Amjad Hameed Atiyah (Assistant Lect.)	Administration and Economics	Financial and Banking Sciences			√	
Zainab Saad Daaboul (Assistant Lect.)	Veterinary Medicine and Surgery	Veterinary			√	
Nuha Allawi Obidan (Assistant Lect.)	Veterinary Medicine and Surgery	Veterinary			√	
Sahar Ismael Naji (Assistant Lect.)	Chemistry Sciences	Physical Chemistry			√	
Baidaa Husain Jasim (Assistant Lect.)	Biological Sciences	Microbiology			√	

Hadi Riyadh Abdul Hamza (Assistant Lect.)	History	Modern and contemporary history			√	
Ali Metcab Khalaf (Assistant Lect.)	Pathological Analysis	Pathological Analysis			√	
Manar Haider Abd Al Hussein (Assistant Lect.)	Arts	Islamic Archaeology			√	
Doaa fareed fawzi (Assistant Lect.)	Sciences	Biological Sciences			√	
Mohamed Hatem Abd (Assistant Lect.)	Animal production	Reproductive physiology			√	
Faiq Dakhel Saadoun (Assistant Lect.)	Sciences	Physics				√

Professional Development

Mentoring new faculty members

The college and department guide new and visiting faculty members by providing them with essential information about the institution's vision and academic policies, and introducing them to the program plan, its requirements, and assessment methods. A tour of the laboratories and classrooms is also conducted, along with an explanation of safety regulations. Furthermore, a faculty member is assigned as a mentor to assist them during their integration period and facilitate their adaptation to the academic work environment.

Professional development of faculty members

The college is committed to providing ongoing professional development for faculty members through workshops and training courses in modern teaching strategies, active learning methods, and mechanisms for assessing learning outcomes. Technical and academic support is also provided to enhance the use of e-learning platforms, encourage participation in conferences and scientific research, and monitor academic performance to ensure improved teaching quality and the development of teaching and assessment skills. The effectiveness of training is measured through student surveys and analysis of their academic results.

12.Acceptance Criterion

Students are admitted to the College of Applied Medical Sciences according to the central admission criteria issued by the Ministry of Higher Education and Scientific Research, which include competitive GPA and student preferences. All approved academic regulations and standards are strictly adhered to in order to ensure the selection of qualified students.

13.The most important sources of information about the program

1.Tietz Textbook of Clinical Chemistry and Molecular Diagnostics..
2. Henry's Clinical Diagnosis and Management by Laboratory Methods.
3. Medical Laboratory Science: Theory and Practice.

4. Fundamentals of Clinical Chemistry.
5. Clinical Microbiology Made Ridiculously Simple.
6. Hematology: Basic Principles and Practice.

14.Program Development Plan

The Medical Laboratory Technology program strives for continuous development to ensure it meets the demands of the job market and national and international quality standards. The college regularly reviews the program based on feedback from students, stakeholders, and clinical laboratories to improve learning outcomes and update curricula, teaching methods, and assessment techniques.

The future plan focuses on:
Developing learning outcomes that align with the needs of the healthcare sector and modern diagnostic skills.
Updating teaching methods by enhancing e-learning, problem-based learning, and practical applications.
Improving student assessment mechanisms to ensure effective measurement of clinical knowledge and skills.
Upgrading laboratories and equipment to keep pace with technological advancements in medical laboratories.
Building training partnerships with healthcare institutions to enhance clinical field training.
This development plan is an essential part of the quality assurance and accreditation system, ensuring the program's continuous updating and responsiveness to future changes in medical education and diagnostics.

Program Skills Outline													
				Required program Learning outcomes									
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills			Ethics		
				A1	A2	A3	A4	B1	B2	B3	C1	C2	
Year 1/ Level 1	AMS 003	Medical Physics		√					√	√	√	√	
	AMS 002	Analytical Chemistry		√	√				√	√	√	√	
	AMS 001	General Biology		√				√	√	√	√	√	
	UNI 103	Human Rights and Democracy					√				√	√	
	UNI105	Computer I				√			√	√	√		
	UNI003	Arabic Language					√			√		√	
Year 1/ Level 2	AMS 004	Human Cytology		√				√	√	√	√	√	
	PAA1201	Principle of Pathological Analyses		√	√			√	√	√	√	√	
	PAA1202	Human Anatomy		√	√				√	√	√	√	
	PAA1203	Principles of Microbiology		√				√	√	√	√	√	

	PAA1204	Medical Terminology				√				√	√	
	UNI102	English languge I				√				√	√	
Year 2/ Level 1	PAA2305	Principle of Physiology		√	√			√		√	√	√
	AMS 005	Biochemistry		√				√	√	√	√	√
	PAA2306	Parasitic Protozoa		√	√			√	√	√	√	√
	PAA2307	Occupational Laboratory Safety			√				√	√	√	√
	UNI002	English language II				√				√	√	
	UNI0010	The crimes of the Baath regime					√					
Year 2/ Level 2	PAA2408	Human Histology		√				√	√	√	√	√
	PAA2409	Medical physiology		√	√			√		√	√	√
	AMS 009	Bacteriology		√	√			√	√		√	√
	PAA2410	Parasitic Helminathes		√				√	√		√	√
	AMS 006	Medical Virology		√	√			√	√		√	√
	UNI005	Computer II				√			√	√	√	
Year 3/ Level 1	AMS 008	principle of Immunology		√				√	√		√	√

	AMS 0010	Medical Molecular Biology		√				√	√	√	√	√
	PAA3511	Pathological Analyses		√	√			√	√		√	√
	PAA3512	Microbial Diagnosis		√	√			√	√	√	√	√
	PAA3513	Research Methodology								√	√	√
	PAA3514	Clinical Chemistry I		√	√			√	√	√	√	√
Year 3/ Level 2	PAA3616	Medical Genetics		√					√	√	√	√
	PAA3617	Pathology		√				√	√	√	√	√
	PAA3618	Clinical Chemistry II		√	√			√	√	√	√	√
	PAA3619	Serology		√	√			√	√		√	√
	AMS-007	Biostatisics		√					√		√	
	PAA3620	Medical Mycology		√	√			√	√		√	√
	UNI007	Ethics									√	√
Year 4/ Level 1	PAA4721	Clinical Bacteriology		√	√			√	√		√	√
	PAA4722	Toxicology		√	√			√	√	√	√	√

	PAA4723	Clinical Immunology		√				√	√		√	√
	PAA4724	Medical Biotechnology		√				√	√	√	√	√
	AMS-0011	Research Project I								√		√
	PAA4725	Hematology		√	√			√	√	√	√	√
Year 4/ Level 2	PAA4826	Genetic Engineering		√	√			√	√		√	√
	PAA4827	Epidemiology		√	√			√	√		√	√
	PAA4828	Clinical Hematology		√	√			√	√		√	√
	PAA4729	Endocrinology		√	√			√	√	√	√	√
	AMS-0012	Research Project II								√		√
	PAA4830	Antibiotics		√	√			√	√	√	√	√

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:
2. Course Code:
3. Semester / Year:
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	• ..... • ..... • .....

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12.Learning and Teaching Resources	
Required textbooks (curricular books, if ar	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Ministry of Higher Education and
Scientific Research - Iraq
University of Al Muthanna
College of Applied of Medical Sciences
Department of Environmental Health

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Biology			**Module Delivery**	
Module Type	BASIC			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AMS 001				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Dr. Areej Shaker Jassum		**e-mail**	Areejshakeer@mu.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Areej Shaker Jassum		**e-mail**	Areejshakeer@mu.edu.iq	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	12/3/2025		**Version Number**		

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 Objectives أهداف المادة الدراسية	1. This course describes the nature of biology science and the knowledge of the chemical basis of living organisms and how chemistry defines a large part of the biology study. 2. The students will Be known about the nature of organic bio-compounds (carbohydrates, proteins etc...) and their importance as building blocks of living systems. 3. To understand the characteristics of living organisms and the structure of cells (prokaryotic and eukaryotic). 4. Describe the composition and function of biological membranes, define passive transport- diffusion, osmosis, and facilitated diffusion and relate the changing conditions inside and outside of cells to these definitions. describe active transport and relate the changing conditions inside and outside of cells to the need for AT. 5. Description of cellular reproduction and the different types carried out by selected organisms and the nature of informational molecules (DNA and RNA) and the expression of this information through the process of gene expression. 6. Description of the different types of microorganisms (bacteria, fungi, Protista, and viruses) and their relationship with environmental
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the role of biology and the relevance of different biological processes to our daily life 2. Learn how to work in a safe and efficient environment inside the laboratory. 3. Use the microscope and learn the basic skills of light microscopy. 4. Describe the structure of the cell and learn the function of its different components 5. Compare a prokaryotic and a eukaryotic cell and highlight their differences. 6. Learn the basic concepts in mechanism to moving of materials across the cell membrane. 7. Study the processes of cell division and sexual reproduction. 8. Learn the principles of genetics and solve genetic problems. 9. Study the molecular characteristics of nucleic acids (DNA and RNA) and how nucleic acids and protein synthesis are interrelated. 10. Acquire an overview of the theory of evolution, the origin and the biodiversity of life. 11. Acquire an overview of the classification of microorganisms and their major characteristics. 12. Test hypotheses, run simple experiments and interpret the data inside the laboratory.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Introduction to biology</u> Biology: definition of biology science, branched of biology, characterized of living things, the kingdom of living things, characterized of each kingdom, The Chemical Building Blocks of Life, Carbon Provides the Framework of Biological Molecules, Carbohydrates Form both Structural and Energy-Storing Molecules, Proteins are the Tools of the Cell, Hydrophobic Lipids Form Fats and Membranes [4 hrs] <u>Part B- Structure of Cell</u> Cell: definition of cell, types of cells, different between types of cells, shape of cell, define of prokaryotic cell, characteristic of prokaryotic cell, structure of prokaryotic of cell, example of prokaryotic of cell (6 hrs)

	Eukaryotic cell: define of eukaryotic cell, characteristic of eukaryotic cell, structure of this cell, example of this cell, different between the animal and plant cell, structure of membranes in plant and animal cells, cell wall structure in plant cell, plasma membrane structure, function of plasm membrane, properties of plasm membrane, movement of material across the plasma membrane, passive transport (simple diffusion, facilitated diffusion, osmosis) , active transport , vesicle transport (endocytosis and exocytosis). (8hrs) Organelles of cell: nucleus, endoplasmic reticulum, ribosome, golgi apparatus, mitochondria lysosome, cytoskeleton. (4 hrs) Cell cycle: introduction to cell cycle, types of cell cycle, mitosis, stage of mitosis, meiosis, stage of meiosis. (4hrs) Nucleic acid: The nitrogenous bases are classified into two types, Deoxyribonucleic acid (DNA) structure, RNA (Ribonucleic acid) structure, the different between RNA and DNA, Genes structure, Replication process. Protein synthesis, Transcription process, Translation process (6 hrs). <u>Part C - Microorganisms</u> Bacteria: Define, General properties of bacterial, the classification of bacteria, based on cell wall contents, based on presence of flagella, based on requirement of oxygen, based on method of obtaining nutrition, Reproduction of Bacteria, Vegetative Reproduction of Bacteria, Binary Fission, Asexual reproduction of Bacteria (4hrs) Fungi: introduction to fungi, classification of fungi, reproduction of fungi (4 hrs) Protista: define of parasite, Classification of the of parasitology, Different Kinds of Parasites, Different kinds of Hosts, Life cycle of parasites, Direct life cycle, indirect life cycle, Host-parasite relationship, Effect of parasite on the Host. (4 hrs) Helminthes: introduction of helminths, Groups of Helminths, Phylum: Platyhelminths. (4 hrs) Viruses: Properties of viruses, Structure of virus, General Steps in Viral Multiplication, Classification of virus, Bacteriophages, Two life cycle of the bacteriophage. (4 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students to participate in class discussions, explain lectures by using modern technologies, improving and expanding their critical thinking skills. Also use brainstorming questions for students.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	14	10% (10)	Lac (5, 8 and 9) Lab (1, 3, 4, 9,10,11)	LO #2, #3, #4; #5;
	Assignments	5	10% (10)	2, 7 , 9, 10, 12	#6; #7; #8 ; #9; #10;#11
	Projects / Lab.	6	10% (10)	3,4,7,9,13, 14	LO #1, #6 ; #10; #11
	Report	6	10% (10)	Lab 2,4,5,8,9,10	LO #3, #4; #5;
Summative assessment	Midterm Exam	2hr	10% (10)	1,2,3,4,5,6	LO #1-#6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of general biology
Week 2	Chemistry of Life
Week 3	Cell Structure and prokaryotic cell
Week 4	Eukaryotic cell structure
Week 5	Structure of Membranes
Week 6	Organelles of Cell
Week 7	Cell Cycle
Week 8	Nucleic Acid (DNA, RNA)
Week 9	Protein synthesis

Week 10	Midterm Exam
Week 11	Bacteria
Week 12	Fungi
Week 13	Protists
Week 14	Helminthes
Week 15	Viruses
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Biosafety
Week 2	Lab 2: Microscope
Week 3	Lab 3: Cell Structure, Prokaryotic
Week 4	Lab 4: Eukaryotic
Week 5	Lab 5: Diffusion in cell membrane
Week 6	Lab 6: Movement across the cell membrane in plant cell
Week 7	Exam
Week 8	Lab 7: cell division in yeast
Week 9	Lab 8: Blood component
Week 10	Lab 9: bacteria part 1
Week 11	Lab 10: Bacteria part 2
Week 12	Lab 11: Viruses
Week 13	Lab 12: Fungi
Week 14	Lab 13: protists
Week 15	Lab 14: Helminthes

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Mason, K. A., T. Duncan, G. Johnson, J. B. Losos, and S. R. Singer. 2018. Understanding Biology, 2 nd Ed. New York, NY: McGraw-Hill Education, Inc. (M)	No

Recommended Texts	Raven 2019, Biology, 12th edition, McGraw Hill	No

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
[redacted]				

NB 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.

ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل منيرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي

	Ministry of Higher Education and Scientific Research - Iraq University AL Muthanaa College of Applied of Medical Sciences Department of Clinical Laboratories	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	PRINCIPLE OF MICROBIOLOGY	**Module Delivery**	
Module Type	CORE	✓ Theory ✓ Lecture ✓ Lab ✓ Discussion Practical experiments ✓ Seminar	
Module Code	PAA1208		
ECTS Credits	7		
SWL (hr/sem)	150		
Module Level	1st	**Semester of Delivery**	2nd
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Dr. Dhifaf Jabbar Shamran	**e-mail**	dhifaf15@mu.edu.iq
Module Leader's Acad. Title	Assistant professor	**Module Leader's Qualification**	PHD.
Module Tutor	Bushra Hussein Alwan	**e-mail**	bushra.hussein@mu.edu.iq
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	1

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	This course provides the students with basic theoretical and practical aspects of various groups of microorganisms that include bacteriology, virology, and mycology. It also introduces (through Lab work) the basic concepts of disinfectants, antiseptics, preservatives, Ames test, methods of sterilization, aseptic techniques, Staining technique, Types of culture media used in microbial growth and AST technique.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of this module the students will be able to know the following: 1.Understanding different theoretical terms that related to microbiology and the most important tools and equipment in microbiology lab. 2.Understanding the classification of micro-organism 3.The importance of using microscope in microbiology 4. Understand microbial growth, metabolism, nutritional requirements, microbial cultivation. 5. understand the most important factors that affect the microbial growth. 6. understand the basic structure and pathogenic steps for bacteria, Fungi, and viruses. 7. Understand basic structure of genetic material of microorganisms. 8. Recognize the concepts of antimicrobial agents, sterilization, and disinfections. 9. understand basic concepts of immune response against microbial infections.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1-Introduction: What is microbiology? And Why is microbiology important? Description of Light microscopy and Electron microscopy (2)hrs 2- Cell Structure and Organization: The prokaryotic cell, The eukaryotic cell, Cell division in prokaryotes and eukaryotes (4)hrs 3. Microbial Nutrition and Cultivation: Nutritional categories, How do

	nutrients get into the microbial cell? (2) hrs 4- Microbial Growth: Estimation of microbial numbers, Factors affecting microbial growth, The kinetics of microbial growth (2) hrs 5- The Fungi: General biology of the Fungi and fungal structure, Classification of the Fungi. (2)hrs 6- virus: What are viruses, What are Structure and component, Replication of viruses (2)hrs 7. Classification of viruses: How they classify viruses, Factors that associated with classification of viruses (2)hrs 8. The microbial genetics: How do we know genes are made of DNA, DNA replication, Gen transfer between microorganism (4)hrs. 9. The Control of Microorganisms: Sterilization, Disinfection, The kinetics of cell death (2)hrs. 10. Antimicrobial Agents Antibiotics: Resistance to antibiotics, Antibiotic susceptibility testing, Anti-fungal agents, Antiviral agents (4)hrs. 11. Immune response to infection: What is natural immune system, Component of natural immune system , Cells of natural immune response, What adaptive immune system, Component of adaptive immune system , Cells of adaptive immune response (4)hrs.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecture Discussion Co-operative learning Experimental Learning Problem-Based learning

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	15% (15)	3,6,9,12	LO#2,5
	Assignments or Home Work	1	5%(5)	5	LO#11
	Projects / Lab.	1	5% (5)	2	LO# 3,8
	Report	1	5% (5)	1	LO# 1
	Seminar	1	5%(5)	4	LO# 11
	Discussion	1	5%(5)	7	LO# 7
Summative assessment	Midterm Exam	1hr.	10% (10)	8	LO# 1-7
	Final Exam	2 hr.	50% (50)	16	All
Total assessment			100 %		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to microbiology
Week 2	Prokaryotic cell structure
Week 3	Eukaryotic cell structure
Week 4	Microbial nutrition
Week 5	Microbial growth
Week 6	Fungi
Week 7	Virus
Week 8	Mid exam
Week 9	Microbial genetics
Week 10	Control on microbial growth
Week 11	Antimicrobial agents
Week 12	Antiviral and antifungal
Week 13	Nonspecific (Innate) immunity
Week 14	Specific (Adaptive) immunity
Week 15	Seminar

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر	
	Material Covered
Week 1	The microscope and lab equipment
Week 2	Safety precautions
Week 3	Sterilization and disinfection
Week 4	Types of culture media
Week 5	Staining of bacteria
Week 6	Lab project
Week 7	Virus detection and Isolation
Week 8	Virus detection and Isolation
Week 9	Fungi culturing
Week 10	Antibiotic sensitivity
Week 11	Lab project
Week 12	Ab-Ag interaction
Week 13	Experiment of Ab-Ag agglutination
Week14	Estimation of bacterial number
Week 15	Identification of unknown sample

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Essential microbiology: stuart hogg, standard operative procedures in microbiology for laboratory technicians dr. Saroj hooja dr. Nita pal	No
Recommended Texts	Lippincott, richard a harvey, cynthia nau cornelissen bruce d. Fisher, third eddition 2013	
Websites	https://www.perlego.com/book/1008144/essential-microbiology-pdf	

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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 passes" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

ملاحظة: هذا النموذج تم رفعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research - Iraq
University of Al-Muthanna
College of Applied Medical Sciences
Department of Environmental Health

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Biochemistry			Module Delivery	
Module Type	core			☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	ENH-1206				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		Semester of Delivery	2	
Administering Department	Type Dept. Code		College	Type College Code	
Module Leader	Haider Shanshool Mohammed		e-mail	Haider.shanshool@mu.edu.iq	
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.	
Module Tutor	Haider Shanshool Mohammed		e-mail	Haider.shanshool@mu.edu.iq	
Peer Reviewer Name	Name		e-mail	E-mail	
Scientific Committee Approval Date	04/3/2025		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	Life is driven by biochemical reactions. Biochemistry is an introductory module providing the essentials for understanding all living processes. Biochemistry is the study of how our bodies utilize the nutritional substances in our diet to make building blocks, fuels, and communication molecules for our cells. It also includes the processes by which we convert chemicals within our bodies and eliminate chemicals from our bodies. The students study carbohydrates structure , lipid structure protein structure, vitamin structure , DNA structure , enzyme and inhibitor basic .understanding how each of these processes function and shape the living cell. Practical sessions offer you vital hands-on experience, learning key techniques and how to apply them. Core biochemical experience is highly relevant to applications in medical science. This module provides the foundation from which you may progress to higher level modules in Medical biochemistry, diagnostic biochemistry, clinical biochemistry, Bioinorganic Chemistry and Pharmacology.
Module Learning Outcomes مخرجات التعلم للمدة الدراسية	On successfully completing the module the students able to... 1. Explain the basic concepts of biochemistry 2. Recall the range and structures of biological molecules 3. Summarize the relationship between chemical structure and biological function 5. Communicate key practical skills relating specifically to biochemistry 6.Describe the basic principles of biochemistry/chemical biology 7.Evaluate essential key facts and theory in a subdiscipline of the biosciences 8.Describe and begin to evaluate aspects of biochemistry with reference to textbook material
Indicative Contents المحتويات الإرشادية	1- Definition, fuctions of carbohydrates , classification, cyclic structures and mutarotation). 2- Monosaccharides, monosaccharides of biological importance, important properties of monosaccharides). 3- Disaccharides, most common disaccharides, properties of disaccharides and oligosaccharides. 4- Types of polysaccharides, types of heteropolysaccharides and proteoglycans. 5- Definition , fuctions of lipids, classification of lipids, derived lipids and

	compound lipids. 6- Fatty acids, nomenclature of fatty acids, essential fatty acids, non essential fatty acids. 7- (definition , fuctions of amino acid ,classification and structure of amino acids). 8- Definition , fuctions of protein , ,classification and structure of some protein. 9- Definition , fuctions of enzymes , 10- Nomenclature and classification of enzymes, specificity of enzymes , coenzyme . 11- Mechanism of enzyme action, models of enzyme-substrate complex formation 12- Factors affecting enzyme action and type of enzyme inhibition 13- Definition, classification, water-soluble vitamins(b and c). 14- Fat-soluble vitamins(e,d,a and k). 15- Pyrimidine and purine bases.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**A- Methods of teaching and learning** **1- Using a Bower point to clarify the theoretical aspect.** **2- Use of visual aids.** **3- Use of practical tools.** **4- quiz assignments and posts inside the hall.** **B- Evaluation methods** **1- Practical tests** **2- Theoretical tests** **3- Reports and studies** **4- quiz assignment with self-solving questions** **5- Grades determined by homework**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	76	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	99	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
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	7% (10)	3.5,8,10,13	1and 2-3and 4-5and 6-7,8,9and 10-11and 12
	Assignments	5	6% (10)	15	LO # 3, 4, 5, 6,7,and 9
	Projects / Lab.	6	6% (10)	15	
	Report	1	6% (10)	12	LO # 5, 8 and 9
Summative assessment	Midterm Exam	8	15% (10)	8	LO # 1-8
	Final Exam	14	60% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of biochemistry)2 hrs.)
Week 2	Carbohydrate)2 hrs.)
Week 3	Carbohydrate (monosaccharides)) 2 hrs.)
Week 4	Carbohydrate (disaccharides)) 2 hrs.)
Week 5	Carbohydrate(polysaccharides)) 2 hrs.)
Week 6	Lipids)2 hrs.)
Week 7	Fatty acids)2 hrs.)
Week 8	Exam
Week 9	Amino acids)2 hrs.)
Week 10	Proteins)2 hrs.)
Week 11	Enzymes)2 hrs.)
Week 12	Mechanism of enzymes action and enzyme inhibition)2 hrs.)
Week 13	vitamins- water-soluble vitamins)2 hrs.)
Week 14	Vitamins-fat-soluble vitamins.) 2 hrs.)
Week 15	Essential of nucleic acid)2 hrs.)

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to carbohydrate tests)2 hrs.)
Week 2	Benedict's and Barfoed's Test)2 hrs.)
Week 3	Iodine and Seliwanoff's Test)2 hrs.)
Week 4	Molisch's and Fehling's Test)2 hrs.)
Week 5	Bial's and Osazone Test)2 hrs.)
Week 6	Lipid tests: Solubility)2 hrs.)
Week 7	Tests for unsaturation)2 hrs.)
Week 8	Tests for Glycerol)2 hrs.)
Week 9	Reaction of soap)2 hrs.)
Week 10	Detection of cholesterol)2 hrs.)
Week 11	Precipitation Reactions of Proteins)2 hrs.)
Week 12	Ninhydrin reaction)2 hrs.)
Week 13	Biuret test)2 hrs.)
Week14	Xanthoprotic and Millon's test)2 hrs.)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	MN Chatterjea and Rana Shinde . Medical chemistry.2012.8th edition. ISBN 978-93-5025-484-4	Yes
Recommended Texts	Principles of Biochemistry (Lehninger Principles of Biochemistry) - Z-Library	No
Websites		

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
	[redacted]	[redacted]	[redacted]	[redacted]

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.

Al-Muthanna University
Faculty of Applied medical sciences
Department of
Pathological analysis

MODULE DESCRIPTION

وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Analytical Chemistry			Module Delivery	
Module Type	Basic			☒ Theory Lecture ☒ Lab Tutorial Practical Seminar	
Module Code	AMS 002				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		Semester of Delivery	1	
Administering Department	pathological analyses		College	Applied medical sciences	
Module Leader	Haider A. Abdulhadi		e-mail	haiderchemist@mu.edu.iq	
Module Leader's Acad. Title			Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date			Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخر ى			
Prerequisite module	Bio -102	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسيه	The primary objective of this from this course is to provide a thorough background in the chemical principles that are particularly important to instrumental analysis. Second, we want students to develop an appreciation for the difficult task of judging the accuracy and precision of experimental data and to show how these judgments can be sharpened by applying statistical methods to analytical data. Third, we aim to introduce abroad range of modern and classic techniques that are useful in analytical chemistry. Fourth, we hope that, with the help of this book, students will develop the skills necessary to solve quantitative analytical problems and, where appropriate, use powerful spreadsheet tools to solve problems, perform calculations, and create simulations of chemical phenomena. we aim to teach laboratory skills that will give students confidence in their ability to obtain high-quality analytical data and that will highlight the importance of attention to detail in acquiring these data.
	Finally, It is therefore our objective to give undergraduate student a thorough introduction to the principles of instrumental analysis, including spectroscopic, electrochemical, chromatographic, radiochemical, thermal, and surface analytical methods.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	When instrument users are familiar with the fundamental principles underlying modern analytical instrumentation, they can make appropriate choices and efficient use of these measurement tools. For any given analytical problem, a seemingly bewildering number of alternative methods exist for obtaining the desired information. By understanding the advantages and limitations of the various tools, suitable choices can be made, and the undergraduate student can be attuned to limitations in sensitivity, precision, and accuracy. In addition, student of instrumental methods should be aware of the various techniques for calibrating and standardizing instruments, and validating the measurements made. It is therefore our objective to give undergraduate student a thorough introduction to the principles of instrumental analysis, including spectroscopic, electrochemical,

	chromatographic, radiochemical, thermal, and surface analytical methods.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Analytical chemistry deals with methods for determining the chemical composition of samples of matter. A **qualitative method** yields information about the identity of atomic or molecular species or the functional groups in the sample. A **quantitative method**, in contrast, provides .[15 hrs] Comprises the fundamental principles and methods of atomic spectroscopy. investigates the nature of light and its interaction with matter, and introduces the optical, electronic, and mechanical components of optical instruments. concepts and instrument components that are useful in our discussion of molecular spectroscopy. The general nature of atomic spectra and practical aspects of introducing atomic samples into a spectrometer are addressed . explores the practice of atomic absorption and atomic fluorescence spectroscopy, and provides a similar treatment of atomic emission spectroscopy. Mass spectrometry is introduced . as are descriptions of various instruments and methods of atomic mass spectrometry.[20 hrs] Our presentation of atomic spectrometry is completed by a discussion of X-ray spectrometry. In the instrumental Analysis in Action study, we examine analytical methods to monitor and speciate mercury in the environment. numerical information as to the relative amount of one or more of these components. [10 hrs] Begins with an introduction to the theory and practice of ultraviolet, visible, and near-infrared spectrometry followed by applications of these regions of the spectrum . Molecular Luminescence spectrometry, including fluorescence,
	phosphorescence, and chemiluminescence measurement techniques, is described .The theory of infraredspectrometry and instrumentation for collecting infraredspectra are discussed . (applications in the near-infrared, mid-infrared, and far-infrared regions ofthe spectrum). Nuclear magnetic resonance spectrometry is investigated.[15 hrs] Molecular mass spectrometry is explored addresses surface analytical techniques such as electron spectroscopy, secondary-ion mass spectrometry, scanning electron microscopy, and scanning probe microscopy. The instrumental Analysis in Action feature discusses the use of several spectroscopic analytical tools, including surface analytical methods, [20 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوع ا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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
Week 2	Quantitative analysis
Week 3	Solutions and Classification of solutions
Week 4	Express concentrations of solutions
Week 5	Express concentrations of solutions
Week 6	Preparation of solutions
Week 7	Stoichiometric Calculations
Week 8	**Exam**
Week 9	Titration analysis
Week 10	Chemical equilibrium
Week 11	Chemical equilibrium

Week 12	Acid-Base Equilibria
Week 13	Salts and salts hydrolysis
Week 14	Solubility of precipitates
Week 15	Buffer solution
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Laboratory Guidelines
Week 2	Main Glassware Used in the Laboratory
Week 3	Introduction to Analytical Chemistry
Week 4	Laboratory Techniques
Week 5	Preparation & Standardization
Week 6	Preparing solutions by dilution
Week 7	Preparation and Standardization of HCl solution
Week 8	Titration of Sodium Carbonate with Hydrochloric acid (Acid – Base Titration)
Week 9	Exam
Week 10	Titration of Sodium Hydroxide with Hydrochloric acid (Acid – Base Titration)
Week 11	Titration of Mixture with Hydrochloric acid (Acid – Base Titration)
Week 12	Standardization of potassium permanganate using oxalic acid (Reduction-Oxidation Titration)
Week 13	Silver nitrate titrations by Mohr method (Precipitation titration)
Week 14	Complex-formation titration Water hardness
Week 15	Determination of acetic acid percentage in vinegar
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1-Principles of Instrumental Analysis 7e By Douglas A. Skoog,	
	2-Principles of instrumental analysis 6th ed by Skoog,	No
	Holler, Crouch,Modern Instrumental Analysis 47	No
	(Comprehensive Analytical Chemistry) - S. Ahuja, N. Jespersen	No
	.	No
	3-Doulas A. Skoog , Donald M. West, F. James, Stanley	No
	R. Crouch, Fundamentals of Analytical	
	Chemistry,9Edn.,2014, Brooks/Cole,Cengage, Learning, New,	

	York,1090 4-Daniel C. Harris, Quantitative Chemical Analysis, 7 Edition,2007,published by W. H. Freeman and Company, New York 5-Gary D. Christian,Purnendu K. Dasgupta and Kevin A. Schug , Analytical Chemistry, 6th Edition, 2004, John Wiley and Sons, Inc.	
Recommended Texts		
Websites		

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
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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

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Al-Muthanna University
Faculty of Applied medical sciences
Department of
Pathological analysis

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Medical Biochemistry	Module Delivery	
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PAA-23112		
ECTS Credits	7		
SWL (hr/sem)	175		

Module Level	2	Semester of Delivery	3
Administering Department	pathological analyses	College	Applied medical sciences
Module Leader	Haider A. Abdulhadi	e-mail	hiderchemist@mu.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخر ى			
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	General statements describing what the program or institution intends to achieve. 1. - Graduating experienced and competent graduate who contribute in practice with their acquired scientific and practical experience in the health field. 2. Active contribution to community health service by spreading awareness and health culture about the role of diagnostic analysis and their role in the therapeutic aspect of patients. 3. Striving to compete and enter the ranks of local and international academic classifications by enhancing the role of the fields of Pathological Analysis sciences in program accreditation and improving the quality of the solid educational and research process. 4. Developing the skills of functional cadres and improving their administrative role with the development-taking place in the field of electronic governance. 5. Diversity in Pathological Analysis specialties for highly qualified teaching staff to contribute to the preparation of alumni capable of providing service to patients.

	1. To integrate content, skills, critical thinking and the published works of others to design feasible experiments and independent research projects employing the scientific method. 2. To demonstrate the ability to analyze and interpret data, including critically analyzing experimental design and data interpretation in the primary literature. 3. To develop scientific writing skills through the writing of papers using scientific conventions of format, succinctness, objectivity and accuracy. 4. To develop oral communication skills within the context of scientific conventions of format, succinctness, objectivity and accuracy through the oral and poster presentations

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Students will be able to explain/describe the synthesis of proteins, lipids, nucleic acids, and carbohydrates and their role in metabolic pathways along with their regulation at the epigenetic, transcriptional, translational, and posttranslational levels including RNA and protein folding, modification, and degradation. Regulation by non-coding RNAs will be tied to the developmental and physiological functioning of the organism.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Theory Parts Carbohydrates Carbohydrates include sugars and starches. These compounds contain only the elements carbon, hydrogen, and oxygen. Functions of carbohydrates in living things include providing energy to cells, storing energy, and forming certain structures, such as the cell walls of plants. The monomer that makes up large carbohydrate compounds is called a monosaccharide. The sugar glucose, represented by the chemical model below, is a monosaccharide. It contains six carbon atoms (C) and several atoms of hydrogen (H) and oxygen (O). Thousands of glucose molecules can join together to form a polysaccharide such as starch. (15 hrs) Lipids Lipids include fats and oils. They contain primarily the elements carbon, hydrogen, and oxygen, although some lipids contain additional elements such as phosphorus. Functions of lipids in living things include storing energy, forming cell membranes, and carrying messages. Lipids consist of repeating units that join together to form chains called fatty acids. Most naturally occurring fatty

acids have an unbranched chain of an even number (generally from 4 to 28) of carbon atoms. (15 hrs)

Proteins

Proteins include enzymes, antibodies, and many other important compounds in living things. They contain the elements carbon, hydrogen, oxygen, nitrogen, and sulfur. The functions of proteins are very numerous. They include helping cells keep their shape, making up muscles, speeding up chemical reactions, and carrying messages and materials. The monomers that make up large protein compounds are called amino acids. There are 23 different amino acids that combine into long chains (called polypeptides) to form the building blocks of a vast array of proteins in living things. (10 hrs)

Nucleic Acids

Nucleic acids include the molecules DNA (deoxyribonucleic acid) and RNA (ribonucleic acid). They contain the elements carbon, hydrogen, oxygen, nitrogen, and phosphorus. Their functions in living things are to encode instructions for making proteins, to help make proteins, and to pass the instructions from parents to offspring. The monomer that makes up nucleic acids is the nucleotide. All nucleotides are the same except for a component called a nitrogen base. There are four different nitrogen bases, and each nucleotide contains one of these four bases. The sequence of nitrogen bases in the chains of nucleotides in DNA and RNA makes up the code for protein synthesis, called the genetic code. The animation below represents the very complex structure of DNA, which consists of two chains of nucleotides. (10 hrs)

<u>Practical Parts</u>

Include special tests to detect

1- Monosaccharides and their types. Detection of ketone and aldehyde
2- Fats and their types, saturated and unsaturated fats
3- Amino acids and their types, aromatic and alphatic acids (10 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Biochemistry is a very difficult subject, as it covers so many areas. Therefore, it is necessary to start teaching biochemistry from the basic concepts. It is far more important to teach students about conducting experiments in a laboratory in a clear and easy way. And then, the students should learn the key topics. It requires many things to be learned. So, when you are teaching biochemistry, you should start with the basics first. Students should understand the basic concepts of chemistry, and they should be able to follow along. After that, you should move on to the more complicated topics

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوع ا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	2,5, 9	LO 1,2,3,4,6,7, and 8
	Assignments	2	10% (10)	7, 13	LO 2,5 and 9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	LO # 10,11.12 and 13
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظر ي

	Material Covered
Week 1	Biomolecules, Cell components
Week 2	Digestion \Absorption
Week 3	Glycolysis
Week 4	TCA cycle
Week 5	Glycogen ,Glycogenesis, Glycogenolysis
Week 6	Disorders and Diseases associated with carbohydrates metabolism
Week 7	Synthesis of FA. Synthesis of TG, Cholesterol Synthesis, Volumetric calculations.
Week 8	Mid Exam
Week 9	Oxidation of Fatty Acids
Week 10	Amino acid Metabolism. 1-catabolism , 2- anabolism
Week 11	Purine Nucleotide Biosynthesis ,Pyrimidine Nucleotide, Biosynthesis Catabolism and Salvage of Nucleotides
Week 12	Chemical composition of H. Mechanism of H. Action Hypothalamus and Pituitary gland
Week 13	Clinical Implications, Disorders and diseases
Week 14	Metabolism Disorders
Week 15	Heme Synthesis disorder
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to medical chemistry
Week 2	Blood collection
Week 3	Determination of blood glucose
Week 4	Serum Total protein
Week 5	Determination of Serum Albumin
Week 6	Determination of Serum Globulin
Week 7	Serum Bilirubin
Week 8	Mid Exam
Week 9	Kidney Function Test
Week 10	Determination of Blood Urea
Week 11	Determination of Serum Creatinine
Week 12	Uric acid Determination
Week 13	Lipid Profile

Week 14	Determination of Serum Cholesterol
Week 15	Triglycerides
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Biochemistry, Lippincott Illustrated Reviews 2018	Yes
Recommended Texts	clinical chemistry for medical students DM Vasodivan, 2016	Yes
Websites		

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.

	Ministry of Higher Education and Scientific Research - Iraq Al-Muthanna University College of Applied of Medical Sciences Department of Clinical Laboratories	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	ENGLISH LANGUAGE	**Module Delivery**	
Module Type	SUPPLEMENT	✓ **Theory** ✓ **Tutorial** ✓ **Tutorial Practical** ✓ **Seminar**	
Module Code	UOK102		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Mohenned Alsaadawi	**e-mail**	mohenned.hemza@mu.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Graduated from University of Leicester/ United Kingdom
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	1

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	This course aims at: 1- Enhancing a mastery over the basic structure of a standard English Sentence. and the type of language used in scientific fields of study. 2- Knowing a good bit of information about the basic phrases in English Language regarding their formation, position in sentence word order, uses in real life situation as related to their field of work. 3- Focusing on the difference between simple and continuous present and past tenses as related to their study and career. 4- Enabling students to write certain types of expressions and texts useful for their field of study and future career. 5- Stimulating and directing students to speak and practice English language correctly, asserting the type of language used in real life situations and scientific field of study. 6- Specifying points of weakness in students' performance, trying to amend them. 7- Building a type of scheme in students' minds about what writing and speaking standard English language is supposed to be. 8- Forcing students to think critically while doing the assignments, quizzes and other similar activities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student would be able to: 1- Speak and write a good standard sentence or type of English Language. 2- Differentiate between types of basic tenses. 3- Have a fluency while speaking the English Language. 4- Write acceptable formal and informal texts. 5- Comprehend the idea behind string of words in a sentence. 6- Work collectively within a teamwork.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Word order: Statements, questions imperatives (command, request, instructions). - Phrases: Nouns, Adjectives, Adverbs, Verbs, Prepositions. - Verbs: Tenses (Form and basic uses), Passive. - Knowing how to say and write some useful texts. - Some text for reading comprehension and videos or recordings for listening. - Basic guide lines in writing a summary, letters, paragraphs, CV. - Topics for discussion.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The program is designed to have two theoretical hours in points related to grammar and other three hours for the sake of practicing including doing the exercises. Before an exam, the student will have the chance to review the previous given materials. The practical hours includes some basic information in pronunciation, reading, speaking, listening and writing skills. The program instructor will follow a mixture of traditional and communicative approaches to achieve the above mentioned aims. The students will be asked to do some exercises and quizzes in relation to grammar. They could be divided into groups having certain duties related to different practical activities to be done by them. Each student will have his own evaluation which will raise the grade of each group work as a whole. The best group work will be rewarded at the end of the semester with some additional marks for their good performance during the course. Doing quizzes and assignments inside the classroom are very important to adjust some important grammatical points. To ensure self-learning, some websites and parts of texts related to the given lectures are going to be given to them. Certain activities such as speaking and listening are going to be given forward so as to be ready for the duties while practicing them inside the classroom..

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative Assessment	Quizzes	3	5	2,6,13	1, 2, 4
	Assignments	4	5	3,6,11,13	1,2,4, 5,6
	Reading	2	10	3,6,9,11,13	1, 2, 7
	Writing	4	10	1,2,4,5,6,7,9 ,13, 14	1, 2, 4,, 7
	Speaking	4	10	Continuous	1, 2, 3, 4,7
Summative Assessment	Midterm Exam	1	10	7	1, 2, 4,
	Final Exam	1	50	15	1,2,4,5,
Total Assessment			100		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Word Order in Standard English – Statement: Positive vs. Negative, Questions.
Week 2	Word Order in Standard English – Imperative Sentence: Instructions, Request, Command.
Week 3	Nouns: singular nouns vs. plural nouns, Gender, Pure nouns-Derived nouns, Articles.
Week 4	Nouns: Pronouns, Expressions of Quantity, Position in Word Order.
Week 5	Adjectives: Pure adjectives -Derived adjectives, Comparison Degrees, Position in Word Order.
Week 6	Adverbs: Pure adverbs-derived adverbs, Position in Word Order, Adverbs of Degree.
Week 7	Mid-Term Exam
Week 8	Expressing: Time, conditional, result, reason, purpose, contrast.
Week 9	Prepositions: Uses, position in Word Order.
Week 10	Verbs: Tenses-Present (Simple vs. Continuous).
Week 11	Verbs: Tenses-Past (Simple vs. Continuous).
Week 12	Verbs: Futurity, Modals (can, may, should, etc.).
Week 13	Verbs: Passive Voice.
Week 14	General Review and some Additional Notes.
Week 15	Final Exam

Delivery Plan (Weekly Practice Syllabus)	
Week	**Material Covered**
Week 1	Alphabetical Order, Word Order: Reforming Sentences, Introducing Oneself, Writing Simple Sentences.
Week 2	Jobs and Specialties in a Hospital. Listening 1, Writing Different Types of Sentences, Describing something around.
Week 3	Assignment 1, Reading and Writing Numbers in different Situations. Reading passage 1
Week 4	Different Types of Derived Nouns and How to Use them in a Sentence. Listening 2, Writing a Summary.
Week 5	Countries, Nationalities, Languages, Parts of Human Body, Listening 3, Writing a Short Report of an Experiment .
Week 6	Assignment 2, Days, Months, Colors, Reading Passage 2, Writing a Letter.
Week 7	Clothes, Continents, Pronouncing the suffix (s), Listening 4 Writing a Good Paragraph.
Week 8	Expressing: Time, conditional, result, reason, purpose, contrast.
Week 9	Things in the Lab\Hospital, Reading Passage 3, Pronouncing the suffix (-ed), Writing a Good paragraph.
Week 10	Verbs: Tell-Say, Reply-Answer-respond, Fill-Full, Listening 5, Punctuation Marks.
Week 11	Assignment 3, Some Silent Letters in English Words, Reading passage 4

Week 12	Like-love, Listening 6, Performing Certain Situation 1, a Topic for Discussion.
Week 13	Performing Certain Situation 2, Reading Passage 5, Writing a Good CV.
Week 14	Performing Certain Situation 3, Writing about Future Dreams or Plans.
Week15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	John and Liz Soars. New Headway Plus, United Kingdom: Oxford University Press.	Yes
Recommended Texts	Baily, Stephen. 2011. *Academic writing.* London: Rutledge.	Yes
	Hewings, Martin. 2012. *Advanced grammar in Use.* United Kingdom: Cambridge university Press.	Yes
Websites	- https://www.oxfordonlineenglish.com/ - https://www.grammarly.com/ - https://www.softschools.com/language_arts/reading_comprehension/science/8/magnetism/ - https://eslflow.com/	

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	**التقدير**	**Marks (%)**	**Definition**
Pass 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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

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Ministry of Higher Education and
Scientific Research - Iraq
University of Al Muthanna
College of Applied of Medical Sciences
Department of Clinical Laboratories

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Medical Terminology	**Module Delivery**	
Module Type	BASIC		✓ Theory ✓ Lecture Lab ✓ Tutorial ✓ Practical ✓ Seminar
Module Code	CLA1209		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	**Semester of Delivery**	2
Administering Department		**College**	
Module Leader	Ali Meteab Khalaf	**e-mail**	ali.meteab.khalaf@gmail.com
Module Leader's Acad. Title	Assist. Lecturer	**Module Leader's Qualification**	Master
Module Tutor	Ali Meteab Khalaf	**e-mail**	ali.meteab.khalaf@gmail.com
Peer Reviewer Name	Dr. Ali Meteab Khalaf	**e-mail**	ali.meteab.khalaf@gmail.com
Review Committee Approval		**Version Number**	1

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	Recognize and comprehend fundamental medical terminology Recognize and understand medical abbreviations Type and say the fundamental medical terms. Use your understanding of word roots, suffixes, and prefixes from the course to analyze unfamiliar terms. Connect terminology learned in class to practical uses. Learning this special language is an important step in preparing for your career as a healthcare professional. Learning medical terms is much easier than learning a foreign language because you are already familiar with quite a few of the words, such as appendicitis and tonsillectomy.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1.To integrate terminology, recognize and define prefixes, roots, and suffixes. 2. Acquire a rudimentary knowledge of abbreviations and terminologies used in medicine in health and diseases. 3.Recognize important body structures to knowledge of fundamental anatomy and physiology , Levels of Organization, Anatomical Position, Planes of the Body and Body Cavities. 4.Study Integumentary system in level structure, function and their medical word . 5.Explain Skeletal System Structure, function (Bone, Cartilage) with recognize Medical words for these System. 6. Study Muscular system Basic structure and function and It medical words. 7. Basic Knowledge of Cardiovascular System Heart, blood vessels with it function and medical words. 8. With structure and Function Lymphatic and Immune systems learned medical words for these systems. 9. Learn basic Structure and Function of Respiratory System with it medical words used. 10. Learn list Medical words used in Digestive System with system basic structure and function. 11. Urinary system Basic Structure and function with list of important Medical Words used in these system. 12. Learn basic Structure and Function of Nervous System with it medical words used. 13. Ear and Eye basic Structure and Function and learn list of medical word used in medicine for these two organs. 14. Study Endocrine system in level structure, function and their medical word .
Indicative Contents المحتويات الإرشادية	Indicative content includes the following:

	1. Introduction, parts of medical word, word root (wr), combining form (cf), suffix, prefix. 2. This list contains essential word parts and medical terms for this lecture. 3. Levels of organization, anatomical position, planes of the body, body cavities. 4. Structures, combining forms, and functions of the integumentary system. 5. Structures and functions of the skeletal system, the formation of bones, the structure of bones, the tissues of bone, bone marrow. 6. Functions of the muscular system, structures of the muscular system, tendons, muscle fibers, fascia, types of muscles. 7. Functions of the cardiovascular system, structures of the cardiovascular system, the heart, systemic and pulmonary circulation. 8. Structures, combining forms, and functions of the lymphatic and immune systems. 9. Structures, combining forms, and functions of the respiratory system. 10. Structures, combining forms, and functions of the digestive system. 11. Structures, combining forms, and functions of the urinary system. 12. Structures, combining forms, and functions of the nervous system. 13. Structures, combining forms, and functions of the eyes and ears. 14. Structures, combining forms, and functions of the endocrine system.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Examine the whole thing, module by module. This also includes the case studies and worksheets in the section on enrichments, which can be utilized for more practice and learning. 2. Work through the modules to become familiar with the product's organizational structure. To become comfortable with the material, it would be better to finish all of the modules. If there isn't enough time for that, choose a few modules that are distinct from one another (such as the muscular and digestive systems) and finish those. Determine if you'll require students to finish all of the practice exercises in the module. Some facilitators may remove labeling exercises to save time. Choose whether to assign the case studies or worksheets from the enrichment section. 3. Make a decision regarding the product's integration into your program. a. Will Medical Terminology serve as a stand-alone reference or an addition to the existing materials? b. Will Medical Terminology be utilized in a single course only or will it be spread out throughout several courses (like a wheel structure)? c. Will the course be offered in a hybrid format, online, or both? d. How long will the course last? What length of time will the content be given over? 4. Create a plan for execution.

	a. If Medical Terminology is a stand-alone resource, link each module's learning objectives to the course objectives. a. If Medical Terminology will be used in numerous courses, make sure the content is matched with the proper units or courses. c. Included is a transition chart taken from various medical terminology texts.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	5	10	3, 6, 9, 12,15	
	Assignments	2	10	4, 12	
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	1 hrs	20	7	
	Final Exam	3 hrs	60		
Total assessment			100		

Delivery plan (weekly syllabus) المنهاج الاسبوعي النظري	
	Material covered
Week 1	Introduction to the medical terminology
Week 2	The human body in health and diseases.
Week 3	Body structure.
Week 4	The integumentary system.
Week 5	The skeletal system.
Week 6	The muscular system.
Week 7	**Exam 1**

Week 8	The cardiovascular system.
Week 9	The lymphatic and immune systems.
Week 10	The respiratory system.
Week 11	The digestive system.
Week 12	The urinary system.
Week 13	The nervous system.
Week 14	The eyes and ears.
Week 15	The endocrine system.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Ehrlich A. and Carol L. Schroeder. Medical Terminology for Health Professions. 2013. Seventh Edition. ISBN-13: 978-1-111-54327-3	NO
Recommended Texts	D. Andersson M. Mastenbjörk M.D. Medical Terminology. 2016. **Second Edition.**	
Websites		

APPENDIX:

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
[redacted]	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
	[redacted]	[redacted]	[redacted]	[redacted]

Note:

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	Ministry of Higher Education and Scientific Research - Iraq University of Kerbala College of Applied of Medical Sciences Department of Clinical Laboratories	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	HUMAN ANATOMY	**Module Delivery**	
Module Type	CORE	✓ **Theory** ✓ **Lecture** ✓ **Lab** ✓ **Tutorial** **Practical** ✓ **Seminar**	
Module Code	CLA1207		
ECTS Credits	7		
SWL (hr/sem)	175		

Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Assist. Prof. Dr. Diyar Mohammed Hussein Kadium	**e-mail**	dmh201094@mu.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Human Cytology	**Semester**	1
Co-requisites module	none	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	**At the end of the course the students will be able to:** • Recognize of the body's cells, tissues, organs and systems. • Clarify the mechanism of the normal body functions. • Interpret the relation between structures and functions of the different parts of the body. • Identify the anatomical feature of the different parts of the body.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• An overview of Human Body. • Tissue Structure and Function - General Review. • The Integumentary System. Basic Structure of the Skin. Accessory Organs of the Skin. Plotting the Distribution of Sweat Glands. Dermography: Fingerprinting. • Overview of the Skeleton: Classification and Structure of Bones and Cartilages. The Axial Skeleton. The Appendicular Skeleton. • Classification of Skeletal Muscles, The Neuromuscular Junction. Muscles of the Head and Neck. Muscles of the Trunk. Muscles of the Upper Limb. Muscles of the Lower Limb. • Composition of Blood, Gross Anatomy of the Human Heart, Microscopic Anatomy of Cardiac Muscle, and Anatomy of Blood Vessels. • The Lymphatic System, Studying the Microscopic Anatomy of a Lymph Node, the Spleen, and a Tonsil. • Gross Anatomy and Basic Function of the Endocrine Glands, Microscopic Anatomy of Selected Endocrine Glands. • Nerve Anatomy, The Human Brain, Cranial Nerves, Anatomy of the Spinal Cord, Spinal Nerves and Nerve Plexuses, Parasympathetic and Sympathetic Divisions. • Structure of General Sensory Receptors, Anatomy of the Eye, Microscopic Anatomy of the Retina, Anatomy of the Ear, Olfactory Epithelium and Olfaction, Taste Buds and Taste. • Upper and Lower Respiratory System Structures. • Organs of the Alimentary Canal, Accessory Digestive Organs.

	• Gross Anatomy of the Human Urinary System, Functional Microscopic Anatomy of the Kidney and Bladder. • Gross Anatomy of the Human Male Reproductive System, Gross Anatomy of the Human Female Reproductive System, Microscopic Anatomy of Selected Male and Female Reproductive Organs • Surface Anatomy Roundup (Head, Neck, Trunk, Abdomen, Upper and Lower Limbs).
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **1. Structured Student Workload (SSWL) (75 hrs.\semester)** **Part A: Theory** Introduction of Human Body (2 hrs.) Tissue Classification (2 hrs.) Integumentary system (2 hrs.) Skeletal System (2 hrs.) Muscular System (2 hrs.) Cardiovascular System (2 hrs.) Lymph and Lymphoid Organs (2 hrs.) Endocrine System (2 hrs.) Nervous System (2 hrs.) Sense Organs (2 hrs.) Respiratory System (2 hrs.) Digestive System (2 hrs.) Excretory System (2 hrs.) Reproductive System (2 hrs.) Surface Anatomy (2 hrs.) **Part B: Lab.** Introduction of Human Body (2 hrs.) Tissues: An overview (2 hrs.) Fascia & Skin Appendages (2 hrs.) Joints, Bones and Cartilages (2 hrs.) Muscles, Tendons & Ligaments (2 hrs.) Anatomy of Heart and Blood cells (2 hrs.) Lymphatic Vessels, Cells and Organs (2 hrs.) Glands (2 hrs.)

	Nervous Tissue (2 hrs.) Special Senses (2 hrs.) Anatomy of Respiratory Tract (2 hrs.) Anatomy of Digestive organs (2 hrs.) Excretory Organs (2 hrs.) Anatomy of Male and Female Reproductive Organs (2 hrs.) Surface Anatomy Roundup (2 hrs.) **Part C: Scientific discussion (15 hrs.)** **2. Unstructured Student Workload (USSWL) (100 hrs.\semester)** Project\Lab. (10 hrs.\semester) Preparation of lectures (60 hrs.\semester) Presentation (PowerPoint) (6 hrs.\semester) Quizzes (9 hrs.\semester) Midterm exam (3 hrs.\semester) Preparation of final exam (9 hrs.\semester) Final exam (3 hrs.\semester)
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module is designed to provide the medical students with basic theoretical and practical knowledge about various human systems. It also provides information about the cooperative interaction between cells, tissues, and organs of the human systems in carrying out their functions. On top of that, the main strategies used in this module will be as follow: • Theoretical & Laboratory lectures. • Q\A scientific discussions and Cooperative\Team learning via preparing projects. • Quizzes. • Assignments. • Seminar • Scientific posters. • Midterm and Final examinations.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	76	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	99	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3\3	6%	5, 10, 15	1-4, 6-9, 11-14
	Assignments	1\15	10%	15	14
	Projects / Lab.	1\10	10%	15	14
	Report	3\2	4%	8, 15	7, 14
Summative assessment	Midterm Exam	3\1	10%	8	1-7
	Final Exam	3\1	60%	16	1-15
Total assessment					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of Human Body
Week 2	Tissue Classification
Week 3	Integumentary system
Week 4	Skeletal System
Week 5	Muscular System
Week 6	Cardiovascular System
Week 7	Lymph and Lymphoid Organs
Week 8	Endocrine System
Week 9	Nervous System
Week 10	Accessory glands
Week 11	Respiratory System
Week 12	Digestive System
Week 13	Excretory System
Week 14	Reproductive System

Week 15	Surface Anatomy (Head, Neck, Trunk, Abdomen, Upper and Lower Limbs)
	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر	
	Material Covered
Week 1	Introduction of Human Body
Week 2	Tissues: An overview
Week 3	Fascia & Skin Appendages
Week 4	Joints, Bones and Cartilages
Week 5	Muscles, Tendons & Ligaments
Week 6	Anatomy of Heart and Blood cells
Week 7	Lymphatic Vessels, Cells and Organs
Week 8	Glands
Week 9	Nervous Tissue
Week 10	Special Senses
Week 11	Anatomy of Respiratory Tract
Week 12	Anatomy of Digestive organs
Week 13	Accessory glands
Week14	Anatomy of Male and Female Reproductive Organs
Week 15	Surface Anatomy Roundup (Head, Neck, Trunk, Abdomen, Upper and Lower Limbs
	Final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Marieb, Elaine N. and Smith, Lori A. Human Anatomy & Physiology Laboratory Manual. 12th Edition. Pearson Education Limited, United Kingdom, 2023. • Netter, Frank H. Netter Atlas of Human Anatomy: A systems Approach. 8th Edition. Elsevier, Philadelphia, PA, USA, 2022.	No
Recommended Texts	• Morton, David A.; Foreman, K. Bo and Albertine, Kurt H. The Big Picture: Gross Anatomy, Medical Course and Step 1 Review. 2nd Edition. McGraw-Hill Education, USA, 2019.	No
Websites	• https://www.pearson.com/en-gb/subject-catalog/p/human-anatomy--physiology-laboratory-manual-main-version-global-edition/P200000007224/9781292442280 • https://evolve.elsevier.com/cs/product/9780323760287?role=student • https://www.mheducation.com/highered/product/big-picture-gross-anatomy-medical-course-step-1-review-second-edition-morton-foreman/9781259862632.html	

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