وزارة التعليم العالي والبحث العلمي
Ministry of Higher Education & Scientific Research

جامعة كلكامش
GILGAMESH UNIVERSITY

Academic Program Description Form

University Name: Gilgamesh University

Faculty/Institute: College of Health and Medical Technologies

Scientific Department: Medical and Health Techniques

Academic or Professional Program Name: Bachelor in Medical and Health Techniques

Final Certificate Name: .....

Academic System: Credit –hour system

Description Preparation Date:

File Completion Date:

Signature: Maysada

Head of Department Name:

Date: 2025/9/6

Signature:

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature: Zaid B

Approval of the Dean

1. Program Vision

Providing academically distinguished programs in the field of medical analysis and improving the health level of the community through research aimed at treating medical conditions

2. Program Mission

honesty in laboratory examinations, and be provided with specialized training sites that enable them to gain experience in the field of laboratory analyses

3. Program Objectives

“Enabling graduates of the Medical Analysis Department to perform all routine and advanced tests, possess high skills in dealing with epidemic cases in the community, and be equipped with professional behaviors in patient interaction.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				

College Requirements				
Department Requirements				
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
1st level / Autumn course		English Language	2	-----
		Computer	1	1
		Medical terminology	2	-----
		General chemistry	2	3
		General biology	2	3
		Democracy and Human rights	2	-----
		General Histology	2	3
		Human physiology	2	3
1st level / Spring course		Lab. Instrumentation	2	2
		Arabic Language	2	-----
		Sports	2	
		Biochemistry basics	2	2

		General anatomy	2	3
		Human biology	2	3
		Systematic Histology	2	3
2nd level / Autumn course		English Language	2	-----
		Crimes of the Ba'ath regimen in Iraq	2	-----
		Medical psychology	2	-----
		Metabolism	2	2
		Molecular Biology	2	3
		Medical Microbiology	2	3
		Basic Immunology	2	3
		Medical Helminthes	2	3
		Lab. Management or Epidemiology	2	-----
2nd level / Spring course		Computer	1	1
		Arabic Language	2	-----
		Professional ethics	2	-----
		Biostatistics	2	2
		Medical Bacteriology	2	3

		Metabolic disorders	**2**	**3**
		Medical Protozoa	**2**	**3**
		Genetic engineering or Stem cell	**2**	**3**
3rd level / Autumn course		**Laboratory Safety**	**2**	**3**
		Histopathology	**2**	**3**
		Hematology	**2**	**3**
		laboratory techniques	**2**	**3**
		Medical Mycology	**2**	**3**
		Endocrinology & Clinical Enzymology	**2**	**3**
3rd level / Spring course		**Research methods**	**2**	-----
		Clinical Biochemistry	**2**	**3**
		Medical Virology	**2**	**2**
		Medical Genetics	**2**	**2**
		Medical entomology or opportunistic parasites	**2**	**2**
4th level / Autumn course		**Preventive and social medicine or Serology and Vaccines**	**2**	-----
		Diagnostic Protozoology	**2**	**3**

		Biochemical Diagnostic Techniques	**2**	**3**
		Antibiotics	**2**	**3**
		Nanotechnology or pharmacologic	**2**	**3**
		Blood transfusion	**2**	**3**
4th level / Spring course		**Scientific research methodology**	**2**	-----
		Diagnostic Bacteriology	**2**	**3**
		Clinical Immunology	**2**	**3**
		Diagnostic Helminthology	**2**	**3**
		Advanced Clinical chemistry	**2**	**3**
		Graduation Project	**4**	-----

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods

Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
	6	3			8	1

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14.	Program Development Plan

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	B4	C1	C2	C3	C4

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

Course Description Form

1. Course Name:
Human Anatomy
2. Course Code:
MLT1229
3. Semester / Year:
2024_2025
4. Description Preparation Date:
29−Jul−2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Elham Majeed FLAYH Email: Elham.m.flayh@gau.edu.iq
8. Course Objectives

Course Objectives	Preparing the student at a high scientific level through: • Identifying the descriptive terminology of anatomy • Studying the branches of anatomy • Dissecting the basic structures of the human body, including the skin, muscles, bones, joints and ligaments, blood and lymphatic vessels, nervous system, skeletal system, layers of the brain and spinal cord, twelve cranial nerves with an explanation of the sensory and motor functions of each nerve • Study skull with facial bones and details of each bone, studying the openings and foramina in the bones with knowledge of the nerves and veins that pass through them • Dissecting the bones of the nasal cavity, eye cavity, and ear cavity • Dissecting the skeleton of the human body • Dissecting the chest cavity with dissection of the heart, lung, trachea • Dissection of the abdominal cavity and its organs.

9. Teaching and Learning Strategies

Strategy

A. Cognitive Objectives.

- Acquire basic knowledge of the anatomy of the human body
- This objective is about learning the names and definitions of the various structures of the human body.
- Acquire knowledge about the relationship between anatomy and the physiology of the organs
- This objective is about learning how the different organs and systems of the human body work together to maintain homeostasis.
- Basic knowledge of the practical and clinical applications related to the anatomical bases
- This objective is about learning how anatomy is used in clinical practice, such as in diagnosing and treating diseases.
- This means that the student will learn how anatomy is used in clinical practice, such as in diagnosing and treating diseases.

B. Skill Objectives

- These are the goals that the student is expected to achieve in terms of skills and abilities.
- Thinking in three dimensions for anatomical parts
- This objective is about helping the student develop the ability to visualize the three-dimensional relationships of the body's organs. This can be done using models, diagrams, and other visual aids.
- Surgical and clinical applications and their direct relationship with anatomy
- This objective is about helping the student understand how anatomy is used in clinical practice. This can be done by studying case studies, watching surgical videos, and participating in clinical rotations.

C. Affective and Value Objectives:

- Give the student confidence in how to deal with medical information related to the subject of general anatomy.
- Enable the student to visualize the anatomical relationships of the organs of the body with each other and to use this ability in anatomical analysis with surgery.
- Acquire the basic principles set out in the learning methodology.
- This objective is about helping the student feel confident in their ability to understand and apply medical information related to anatomy.

D. General and Transferable Skills (Other skills related to employability and personal development)

- Prepare the student practically in terms of the anatomy of the human body
- Learn professional ethics and scientific integrity
- Prepare the student to find the correct medical diagnosis and prepare him to become a successful dentist in the future
- Develop the student's ability to deal with various educational means

Teaching and Learning Methods.

	These are the methods that will be used to help students achieve the learning outcomes of the course: • In-person education lectures using data show (PowerPoint) software • This is a traditional method of teaching that involves the instructor presenting information to the students in a lecture format. The instructor may use PowerPoint slides or other visual aids to help illustrate the information. • Labs • Labs are hands-on activities that allow students to apply the knowledge they have learned in the classroom. In the context of an anatomy course, labs might involve dissecting animals or examining human cadavers. • Displaying videos related to the anatomy of an organ or body structure • Videos can be a helpful way to visualize the anatomy of the human body. They can also be used to show surgical procedures or other clinical applications of anatomy. • Using a Kahoot game about anatomy questions to make the students more interactive and add a fun and lively atmosphere to the class • Kahoot is a game-based learning platform that can be used to create interactive quizzes and games. This can be a fun and effective way to help students learn and review anatomy concepts. • Using 3D body model applications • 3D body model applications can help students visualize the anatomy of the human body in three dimensions. This can be a helpful way to learn about the relationships between different structures in the body. • Discussing an anatomical question and linking it to a clinical problem Assessment Methods: • Short quizzes • Term exams • Practical exam including the motor pattern for performing model testing • Reports and activities • Final exam

10. Course Evaluation

Course Development Plan

A. Development of the Course Content:

- Review and update the course content to ensure that it is accurate, current, and relevant to the needs of students.
- Identify any gaps in the curriculum and develop new content to fill those gaps.
- Remove outdated or irrelevant content from the curriculum.
- Reorganize the content to improve the flow of the course.

B. Use of Modern Teaching Methods:

- Incorporate a variety of teaching methods into the course, such as lectures, discussions, group work, and hands-on activities.
- Use technology to enhance the learning experience, such as online resources, simulations, and virtual reality.
- Adapt the teaching methods to the different learning styles of the students.
- Updating Assessment Methods:

- Develop a variety of assessment methods to measure student learning, such as tests, quizzes, projects, and presentations.
- Use rubrics to provide clear and consistent feedback to students.
- Align the assessment methods with the learning objectives of the course.

D. Equipping Students with the Skills Needed for the Dental Profession:

- Focus on developing the skills that are most important for dental professionals, such as critical thinking, problem-solving, communication, and teamwork.
- Provide students with opportunities to practice these skills in a variety of settings.
- Help students develop the professional values that are important for dental professionals, such as ethics, integrity, and compassion.

Lecture	Topic
Part I: General anatomy	
1	Introduction to anatomy and human body
2	Level of organization
3	Anatomical positions
4	Body regions and cavities
5	Body planes and sections
6	Directional terms
7	Tissues and membranes
Part II: Body regions	
8	Upper limb
9	Lower limb
10	Thorax
11	Abdomen
12	Pelvis
13	Head and neck
Part III: Body Systems	
14	Musculoskeletal system: Bones, joints and muscles
15	Digestive system I: Digestive tract
16	Digestive system II: Accessories and glands
17	Cardiovascular system: heart and blood vessels
18	Lymphatic system
19	Respiratory system
20	Nervous system I: Central nervous system: brain and spinal cord
21	Nervous system II: Peripheral nervous system and cranial nerves
22	Nervous system III: Autonomic nervous system
23	Special senses
24	Endocrine system
25	Urinary system
26	Reproductive system
27	Gynecology, pregnancy, and childbirth
28	Embryology
29	Childhood, growth and development

11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Snell's Clinical Anatomy by Regions, 10th edition. Wolters Kluwer 2019 2. Netter's Head and Neck Anatomy for Dentistry, 3rd edition. Elsevier 2017 3. Gray's Atlas of Anatomy, 3rd editi Elsevier 2021
Main references (sources)	4. Snell's Clinical Anatomy by Regions, 10th edition. Wolters Kluwer 2019 5. Netter's Head and Neck Anatomy for Dentistry, 3rd edition. Elsevier 2017 Gray's Atlas of Anatomy, 3rd editi Elsevier 2021
Electronic References, Websites	TM Anatomy and Anatomy Learni applications

Course Description Form

12. Course Name:
Human Physiology
13. Course Code:
MLT1226
14. Semester / Year:
2024_2025
15. Description Preparation Date:
29-Jul-2025
16.Available Attendance Forms:
Weekly
17.Number of Credit Hours (Total) / Number of Units (Total)
4hous /week Unit 6
18. Course administrator's name (mention all, if more than one name)
Name: Dr. Elham Majeed FLAYH

Email: Elham.m.flayh@gau.edu.iq

19. Course Objectives

Course Objectives

To prepare the student to a high level of scientific knowledge by:

- Familiarizing them with descriptive terminology specific to Human Physiology.
- Studying the main branches of Physiology.
- Understanding the functions of the basic structures of the human body at the cellular, tissue, and organ levels, including skin, muscles, bones, joints, and ligaments.
- Understanding the functions of blood and lymphatic vessels.
- Understanding the functions of the Central and Peripheral Nervous Systems, including the brain, spinal cord, and cranial nerves.
- Studying the functions of the Endocrine System and hormones.
- Understanding the functions of the Respiratory System and gas exchange.
- Understanding the functions of the Digestive System and absorption processes.
- Understanding the functions of the Renal System and fluid and electrolyte balance.
- Understanding the functions of the Reproductive System.
- Recognizing the principles of Homeostasis and how to maintain it.

20. Teaching and Learning Strategies

Strategy	
	D. Cognitive Objectives. A1- Acquire basic knowledge of human body physiology. A2- Acquire knowledge related to the correlation between physiology and organ functions. A3- Basic knowledge of practical and clinical applications related to physiological principles. **B.Course-Specific Skill Objectives:** B1- Critical thinking in the mechanisms of physiological systems. B2- Laboratory applications and their direct relationship with physiology. **Affective and Value Objectives:** • Instill confidence in the student regarding how to handle medical information related to General Physiology. • Enable the student to visualize the physiological relationships of body organs with each other in physiological analysis. • Acquire the basic principles stipulated in the learning curriculum. **General and Transferable Skills (Other skills related to employability and personal development):** • Prepare the student practically concerning the functions of the human body.

	• Learn professional ethics and scientific integrity. • Develop the student's ability to deal with various educational tools.

Course Content (Topics)

Lecture

Topic

Part I: General Physiology & Homeostasis

Introduction to Human Physiology and Levels of Organization

Cell Physiology: Cell Membrane and Membrane Transport

Homeostasis and Feedback Mechanisms

Body Fluids and Electrolyte Balance

Part II: Body Systems

Nervous System: Neurons, Action Potentials, Synapses

Central Nervous System: Brain and Spinal Cord

Peripheral Nervous System and Cranial Nerves

Autonomic Nervous System

Muscular System: Muscle Types and Contraction Mechanism

Skeletal System: Bone Physiology and Calcium Regulation

Cardiovascular System: Heart and Circulation

Cardiovascular System: Blood Pressure Regulation, Blood Components

Respiratory System: Mechanics of Breathing and Gas Exchange

Respiratory System: Gas Transport and Regulation of Respiration

Renal System: Kidney Functions and Urine Formation

Renal System: Acid-Base Balance

Digestive System: Digestion and Absorption in the Upper GI Trac

Digestive System: Digestion and Absorption in the Lower GI Tract and Accessory Glands

Endocrine System: Introduction and Major Hormones (Pituitary, Thyroid)

Endocrine System: Adrenal Glands, Pancreas, and Gonads

Immune System: Introduction and Types of Immunity

Physiology of the Skin

Physiology of Special Senses (Vision, Hearing, Smell, Taste, Touch)

Reproductive Physiology

Physiology of Pregnancy and Childbirth (Introduction)

Physiology of Aging and Development

21. Course Evaluation

Course Development Plan

Teaching and Learning Methods

- In-person lectures using data show (PowerPoint).
- Practical laboratories.
- Displaying videos related to the function of an organ or body structure.
- Using interactive games (e.g., Kahoot) for physiology-related questions to make the student more interactive and add an enjoyable and lively atmosphere to the class.
- Using 3D applications for body models to better understand functions.
- Discussing a physiological question and linking it to a clinical problem.

Assessment Methods

- Short quizzes.
- Midterm exams.
- Practical exam, including the kinetic pattern for model testing.
- Reports and activities.
- Final exam.

22. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• *Guyton and Hall Textbook of Medical Physiology* (or latest edition). • *Ganong's Review of Medical Physiology* (or latest edition). • *Human Physiology: An Integrated Approach* by Dee Unglaub Silverthorn (or latest edition).

Course Development Plan

- Developing the course content by adding, deleting, and replacing material to align with the latest scientific advancements.
- Utilizing modern teaching methods that suit the learners' level from time to time.
- Updating assessment methods and measuring student performance.

Course Description Form

23. Course Name:
General chemistry
24. Course Code:
RAD HMT1122
25. Semester / Year:
Semester1/2024-2025
26. Description Preparation Date:
15/7/2025
27.Available Attendance Forms:
Theory/practical /weekly
28.Number of Credit Hours (Total) / Number of Units (Total)
Experimental 3/Theoretical 2
29. Course administrator's name (mention all, if more than one name)
Name: Dr.Anwar S. Hussein Email: anwar2500@yahoo.com

30. Course Objectives

Identifying chemical compounds and how to deal with them due to their risks and harm to hun health.

- Linking the information he studies on the subject of chemistry with what concerns him in specialty, especially in the use of chemical materials in the medical field.

-Get used to adhering to the controls for dealing with and transporting chemicals in the field.

31. Teaching and Learning Strategies

A- Cognitive objectives:
1- Identifying chemical compounds and how to deal with them due to their risk and harm to human health
2- - Linking the information he studies in the subject of chemistry with what concerns him in his specialty, especially in the use of chemistry materials in Developing, fixing and films
3 - Getting used to adhering to the controls for dealing with and transporti chemicals in the specialty
B - Skills objectives for the course:
1 - By working on the practical side of chemistry, the student acquires practi skills, especially in the field of chemistry
Be careful and patient to obtain the results of the experiment
2 - The worker in the field of work in chemistry laboratories obtains experience the field of research, preparing, writing and publishing research through
The nature of work in this field
3 - The student will have the ability to develop scientifically, have a broad range thinking, and solve problems easily

32. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The atom & molecular structu and theory	The atom & molec structure and theory	in person educa lectures using show (PowerPo software.	• Shortc uizzes • Term exam • Final exam
2	2	**Chemical bonding**	**Chemical bonding**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
3	2	**Liquid mixture**	**Liquid mixture**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
4	2	**Quantitative & qualita analysis methods.**	**Quantitative & qualita analysis methods.**	in person educa lectures using show (PowerPo software.	• Shortc uizzes • Term exam • Final exam
5	2	**Molar & normal concentratio method. Problems & discussion**	**Molar & normal concentratio method. Problems & discussion**	in person educa lectures using	• Short cuizzes • Term exam

				show (PowerPo software.	• Final exam
6	2	**Acids, base – exampland proprtiess.**	**Acids, base –exampland proprtiess.**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
7	2	**Buffer solutions-types**	**Buffer solutions-types**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
8	2	**Principles of organic chemistry, hydrocarbons, alkenes, preparation properties reactions**	**Principles of organic chemistry, hydrocarbons, alkenes, preparation properties reactions**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
9	2	**Alkenes & alkynes properties &reaction**	**Alkenes & alkynes properties &reaction**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
10	2	**Electrolytes, electrochemistry**	**Electrolytes, electrochemistry**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
15	2	Final Examination	Final Examination	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam

33. Course Evaluation

- The exam is based on the CUSE system and semester exams

- Distribution of the grade out of 50 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

34. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Chemistry for the Health Sciences George I. Sackheim
Main references (sources)	Nano technology and Application M.M.Radhi - principle of orgenal chemistry - اساس الكيمياء الحيوية د. جاسم جنديل – مدخل الى الكيمياء الحياتية : د. خولة احمد
Recommended books and references (scientific journals, reports…)	Internet
Electronic References, Websites	Websites of magazines classified within Scopus, internati publishing houses, and international universities

Weeks	Details
1	Historical Review of ultrasound imaging

2 & 3	Fundamental physics of ultrasound and interaction with tissues
4 & 5	Transducers and beam-forming
6	B-mode instrumentation
7 & 8	Properties, limitations and artefacts of B-mode images
9	Principles of Doppler ultrasound
10	Colour flow and tissue imaging
11	Quality assurance
12	3D ultrasound
13	Contrast agents
14	Safety of diagnostic ultrasound
15	Final Examination

Course Description Form

35. Course Name:
General Biology
36. Course Code:
HMT1123
37. Semester / Year:
Autumn Semester
38. Description Preparation Date:
17/ 7 / 2025
39.Available Attendance Forms: official full attendance
In-person only
40.Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 3 units
41. Course administrator's name (mention all, if more than one name)
Mustafa Faris Husein
42. Course Objectives
Understanding basic concepts: Teaching students the fundamental concepts in biology such as cells, genetics, biodiversity, evolution, reproduction, and ecology. Enhancing scientific thinking: Encouraging students to develop scientific thinking skills through analysis, investigation,

and evidence-based reasoning.

Environmental and biodiversity awareness: Conveying knowledge about the importance of preserving the environment and biodiversity and their impact on human life and the ecosystem.

Developing scientific and practical skills: Providing opportunities for students to develop skills in experimentation, observation, description, and analysis within the context of biological sciences.

Promoting health awareness: Guiding students to understand how to apply biological concepts in maintaining their personal health and preventing diseases.

Fostering curiosity and exploration: Motivating students to explore various topics in biology and guiding them to discover their academic and career pathways in this field.

43. Teaching and Learning Strategies

- Lectures
- Conducting practical experiments
- Reading textbooks
- Conducting scientific discussions
- Performing practical experiments in the laboratory
- Reading textbooks
- Using data show (projector)

44. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	The Science of Biology Why study biology is importance ,Definition of biology Some subdivision of biology	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
2	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	The Kingdom of Living Things Classification of Organisms, Categories of Classification of Organisms, The five Kingdom Scheme Of Classification	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
3	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	The Characteristics of Living Things (Organisms) Evaluation, Adaptation, Respiration, Homeostasis, Metabolism	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

			,Anabolism, Catabolism Respond to stimuli, Reproduction		
4	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Chemical composition of cells Biochemistry of cell Cell Structure and Function Physical properties of cells Structure of organelles and functions	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
5	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Prokaryotes Cells, Eukaryotes Cells, Differences ,Characteristics and Comparison	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
6	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Cell Division (Mitosis(Cell Division (Meiosis(Inheritance	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
7	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Genetic concepts and principles Gene expression , concepts , Mechanism of action	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
8	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Organ Systems(Digestive ,Circulatory, Respiratory	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
9	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Urinary Muscularly, Nervous)Systems	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
10	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Viruses ,Viriods , Prions , Bacteriophages, Virtual Life Cycle	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
11	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Characteristics, Shapes Viral Human Diseases, Harmful of Viruses	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
12	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Kingdom of monera :Phylum Schizophyta(Bacteria,(Classification Structure ,Morphology., Growth and Function ,Motility	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
13	2Hours	Providing students with the ability to	Harmful Activity of Bacteria	"Hybrid in-person	Quizzes, monthly

		apply theoretical knowledge in practical and research contexts		lecture"	exams, and final semester exams
14	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Bacterial Diseases in Human and Animals	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
15	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Control of bacteria	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	The Microscope	3 hours
2	The Living World, The Science of Biology, Why study Biology, The importance of Clinical Biology	3 hours
3 4	The Characteristics of Organisms, Evaluation, Adaptation, Respiration, Homeostasis", Metabolism, Anabolism, Catabolism, Respond to stimuli, Reproduction	3 hours
5	Biological Classification, Five kingdom classification; Salient features and classification of Monera, Protista, and Fungi into .major groups: Lichens, Viruses, and Viroids	3 hours
6	Chemical constituents of living cells: biomolecule, structure, and function of Proteins, Carbohydrates, lipids, Enzymes and .Hormones Study Cell Structure and Function, Animal cell, Cell membrane, Nucleus	3 hours
7	Study Cell Structure and Function, Animal cell, Cell membrane, Nucleus	3 hours
8	Endoplasmic Reticulum, Golgi apparatus, Cilia, Flagella. Plant cell, Comparison between Animal and plant cell	3 hours
9	Prokaryotes cells, Eukaryotes cells, Differences, Characteristics .and Comparison	3 hours
10	Cell Life cycle, (Mitosis), Nuclear Division, Cytoplasmic .Division	3 hours
12	Meiosis(Human Reproduction), Spermatogensis, Oogenesis	3 hours
13	DNA, RNA structures , Gene and Gene action	3 hours
14	Genetic codes, Replication, Translation, Transcription and Mutation	3 hours

15	Organ, Digestive, Circulatory, Respiratory, Urinary, Muscularly, .Nervous) Systems	3 hours

1. Course evaluation

Distribution is as follows:

50 marks for student effort, consisting of (35 marks for theoretical work + 15 marks for practical work), and 50 marks for the final exam, divided into (35 marks for the theoretical final exam + 15 marks for the practical final exam).

2. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References 1-Glenco-Biology-Dynamic of Life(Megraw 2008). 2-Mader-Biology-Injury into Life (Nine Edition). 3-Prescott, Harley and Klein -Biology-(Sixth Eddition) 4-Glenco-Biology-Dynamic of Life(Megraw 2008). 5-Mader-Biology-Injury into Life (Nine Edition).
Main references (sources)	Prescott, Harley and Klein -Biology-(Sixth Eddition).
Recommended books and references (scientific journals, reports…)	"Campbell Biology" by Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, and Robert B. Jackson.
Electronic References, Websites	" Essentials of Human Anatomy & Physiology" by Elaine N. Marieb and Suzanne M. Keller.

Course Description Form

45. Course Name:
Human Biology
46. Course Code:
MLT12210
47. Semester / Year:
Spring Semester
48. Description Preparation Date:
17/ 7 / 2025
49.Available Attendance Forms: official full attendance
In-person only
50.Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 3 units
51. Course administrator's name (mention all, if more than one name)
Mustafa Faris Hussein
52. Course Objectives

Understanding basic concepts: Teaching students the fundamental concepts in biology such as cells, genetics, biodiversity, evolution, reproduction, and ecology.

Enhancing scientific thinking: Encouraging students to develop scientific thinking skills through analysis, investigation, and evidence-based reasoning.

Environmental and biodiversity awareness: Conveying knowledge about the importance of preserving the environment and biodiversity and their impact on human life and the ecosystem.

Developing scientific and practical skills: Providing opportunities for students to develop skills in experimentation, observation, description, and analysis within the context of biological sciences.

Promoting health awareness: Guiding students to understand how to apply biological concepts in maintaining their personal health and preventing diseases.

Fostering curiosity and exploration: Motivating students to explore various topics in biology and guiding them to discover their academic and career pathways in this field.

53. Teaching and Learning Strategies

- Lectures
- Conducting practical experiments
- Reading textbooks
- Conducting scientific discussions
- Performing practical experiments in the laboratory
- Reading textbooks
- Using data show (projector)

54. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Harmful Activity of Bacteria Bacterial Diseases in Human and Animals, Control of bacteria	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
2	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Kingdom OF Protesta ,Simple Algae, Harmful of Algae	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

3	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Kingdom of Protesta, Protozoans, Classification of Protozoa	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
4	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Phylum of Sarcodina, Amoebas, Phylum of Zoomastigina,	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
5	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Trypanosoma, Giardia Phylum of Protozoa, Plasmodium	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
6	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Kingdom of Fungi, Classification ,Reproduction Harmful Activities of Fungi	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
7	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Yeast and Yeast Like Fungi, Characteristic and Classification ,Candida	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
8	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Kingdom of Animals, Classification, Invertebrates and Vertebrates ,Importance to Human Diseases	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
9	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Human Bodies ,Protection, Support and Locomotion	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
10	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Human Body Defense(Immunity, Antigen, Antibody	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
11	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	,Hormones, Enzymes	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
12	2Hours	Providing students with the ability to apply theoretical knowledge in	Helminthes, Characteristics and Classification	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

		practical and research contexts			
13	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Flat Worms, Round Worms ,Classification, Harm full Activities to Human	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
14	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Ecosystem and Relationships between Organisms	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
15	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Scientific Methods , Steps and Examples of Scientific Methods	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Kingdom of Monera: Phylum Schizophyta (Bacteria),	3 hours
2	Classification, Structure, Morphology, Growth and Function, Motility	3 hours
3 4	Harmful activity of Bacteria, Bacterial Diseases in Human and animals, Control of Bacteria	3 hours
5	Kingdom of Protesta, Simple Algea, Harmful of Algea Kingdom of Protesta, Protozoans, Classification of Protozoa	3 hours
6	Phylum of Sarcodina, Ameobaes, Phylum of Zoomastigin,	3 hours
7	Trypanosoma, Giardia Phylum of Sporozoa, Plasmodium	3 hours
8	kingdom of Fungi, Classification, Reproduction, Harmful Activities of Fungi	3 hours
9	Yeast and Yeast like Fungi, Characteristics and Classification, Candida	3 hours
10	Kingdom of Animal, Classification, Invertebrates and Vertebrates Importance to Human Diseases	3 hours
12	Human Bodies, Protection, Support and Locomotion	3 hours
13	DNA, RNA structures , Gene and Gene action	3 hours
14	Body Defense (Immunity, Antigene, Antibody)	3 hours
15	Flat Worms, Round Worms ,Classification, Harm full Activities to Human	3 hours

3. Course evaluation

Distribution is as follows:

50 marks for student effort, consisting of (35 marks for theoretical work + 15 marks for practical work), and 50 marks for the final exam, divided into (35 marks for the theoretical final exam + 15 marks for the practical final exam).

4. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References 1-Glenco-Biology-Dynamic of Life(Megraw 2008). 2-Mader-Biology-Injury into Life (Nine Edition). 3-Prescott, Harley and Klein -Biology-(Sixth Eddition) 4-Glenco-Biology-Dynamic of Life(Megraw 2008). 5-Mader-Biology-Injury into Life (Nine Edition).
Main references (sources)	Prescott, Harley and Klein -Biology-(Sixth Eddition).
Recommended books and references (scientific journals, reports…)	"Campbell Biology" by Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, and Robert B. Jackson.
Electronic References, Websites	" Essentials of Human Anatomy & Physiology" by Elaine N. Marieb and Suzanne M. Keller.

Course Description Form

55.Course Name:
Basic immunology
56.Course Code:
MLT 226
57.Semester / Year: Semester
58.Description Preparation Date:
20-7-2025
59.Available Attendance Forms: official full attendance
official full attendance
60.Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 3) / Number of Units (Total 30)
61.Course administrator's name (mention all, if more than one name)
Professor doctor tareq Jaafar Aljandeel
62.Course Objectives
Course Objectives Study of the fundamentals of immunology, including: the organs, tissues, and cells of the immune system – innate immunity, its functions and the tissues involved – humoral immunity – cellular immunity – immune response – microbial immunity – autoimmunity – hypersensitivity – vaccines – immunodeficienc
63.Teaching and Learning Strategies
1- **Lectures** 2- **Conducting practical experiments** 3- **Reading textbooks** 4- **Engaging in scientific discussions** 5- **Performing laboratory experiments**

64. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1.Definition of immunity ,types ,factors and mechanism of innate immunity	2	official full attendance	***Exams***
2		Immune system,organs,tissue	2	official full attendance	***Exams***

3		Phagocytosis ,monocytes, inflammation, APC and their types	2	official full attendance	***Exams***
4		Antigen, definition, proteins, types, antigen presentation	2	official full attendance	***Exams***
5		Antigenic determination , definition, properties ,epitopes	2	official full attendance	***Exams***
6		Antibody definition ,structures, types, properties, monoclonal AB formation	2	official full attendance	***Exams***
7		Monoclonal antibody definition, formation, their uses	2	official full attendance	***Exams***
8		Antigen-Antibody reaction properties ,uses	2	official full attendance	***Exams***
9		Immune response primary I.R. ,secondary I.R., regulation I.R	2	official full attendance	***Exams***
10		MHC definition, types, role in organ rejection	2	official full attendance	***Exams***
11		Complement definition, activation ,type of activation, complement deficiency, properdin	2	official full attendance	***Exams***
12		Cytokines and Mediators	2	official full attendance	***Exams***
13		Mucosal immune system	2	official full attendance	***Exams***
14		Antiviral immunity	2	official full attendance	***Exams***
15		Antibacterial immunity	2	official full attendance	***Exams***

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours

1	Collection of blood specimen , preparation of R.B.Cs suspension	2
2	Normality , Dilution and their methods	2
3	Antigen preparation, bacterial Ag : R.B.Cs Ag , protein Ag .	2
4	Natural antibodies study .	2
5	Effect of complement against bacteria	
6	Monoclonal antibodies preparation	2
7	Ag – Ab reaction: Agglutination test.	2
8	Precipitation test.	2
9	Ouchterlony test.	2
10	MHC : typing & its relation of organ rejection	2
12	Complement activation.	2
13	Cytokines & their uses.	2
14	Immunology Agglutination Agglutination techniques test	2
15	Imunofluorescence Techniques ELISA ELISA Radioimmunoassay Inhibition technique	2

5. Course evaluation

weekly examination

reports

Homeworks

6. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Ref. 1. Immunology Kuby ……6th ed. 2. Practical Immunology / Hudsone and Hay ……3rd ed.

	3. Clinical immunology -6th 2010.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

65. Course Name:
Biostatistics
66. Course Code:
67. Semester / Year:
Semester 2 / second
68. Description Preparation Date:
30/7/2025
69. Available Attendance Forms: official full attendance
attendance in the classrooms
70. Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 2units
71. Course administrator's name (mention all, if more than one name)
Hussein Talib Jawad Hussein.t.jawad@gu.edu.iq
72. Course Objectives
This course aims to introduce students to the statistical methods used in the statistical analysis of research. Teaching this subject aims to teach the student on the most important statistical analyzes of research so that the student can benefit from it in the future in using it in the statistical analysis of graduation research as well as benefit from it in the future after graduation by analyzing the results of laboratory tests.
73. Teaching and Learning Strategies
Active Learning through Practical Exercises Utilization of statistical tools and methods and ways of employing them in analyzing phenomena data. Activating student participation during the explanation of the material and posing scientific questions about it, in addition to considering it a student activity in the

evaluation process to determine the student's level and the extent of their understanding of the given scientific material.

Assigning students reports and homework for the purpose of evaluation and determining the student's academic level concerning the scientific material.

74. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Definition of Biostatistics, Some Basic Concepts	Data and Sources of data, Variables, Population Samples and Methods of data collection	Lectures/Discussions	Participation, Discussion, Exam, and Homework
2	2	Methods of presentation of data	Introduction ,Ordered Arrays, Frequency distribution , Graphs	Lectures/Discussions	Participation, Discussion, Exam, and Homework
3	2	Descriptive Statistic: Measures of Central Tendency	(Arithmetic Mean, Median, Mode) of Ungroup and group data	Lectures/Discussions	Participation, Discussion, Exam, and Homework
4	2	Descriptive Statistic: Measures of Dispersion	Range, Variance, Standard Deviation,Coefficient of Variation , Standard Errs	Lectures/Discussions	Participation, Discussion, Exam, and Homework
5	2	Percentiles, Quartiles and Interquartile Rang	Percentiles, Quartiles and Interquartile Rang	Lectures/Discussions	Participation, Discussion, Exam, and Homework
6	2	Normal distribution	Normal distribution Application s	Lectures/Discussions	Participation, Discussion, Exam, and Homework
7	2	Moments, Skewness and Kurtosis	Moments, Skewness and Kurtosis	Lectures/Discussions	Participation, Discussion, Exam, and Homework
8	2	Probability Theory	Elementary Probability Theory	Lectures/Discussions	Participation, Discussion, Exam, and Homework
9	2	Statistical Estimation Theory	Estimation of Population parameters, by Point and by Interval	Lectures/Discussions	Participation, Discussion, Exam, and Homework
10	2	Test of Significant	Degree of freedom, P-Value and level of Significant Type I and Type II Errors	Lectures/Discussions	Participation, Discussion, Exam, and Homework
11	2	t- test	Different type of t-test	Lectures/Discussions	Participation, Discussion, Exam, and Homework
12	2	Chi-Square	Chi-Square significance tests.	Lectures/Discussions	Participation, Discussion, Exam, and Homework
13	2	One-way ANOVA test	One-way ANOVA test	Lectures/Discussions	Participation, Discussion, Exam, and Homework
14	2	Simple Correlation Coefficients	Simple Correlation Coefficients	Lectures/Discussions	Participation, Discussion, Exam, and Homework
15	2	Simple Liner Regression	Simple Liner Regression	Lectures/Discussions	Participation, Discussion, Exam, and Homework

7. Course evaluation The distribution of 50 marks according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports.... etc. 50 marks for the final exam.	
8. Learning and Teaching Resources	
Required textbooks (curricular books, if an	**Professor (Dr.)Amjad Daoud Niazi: "Statisti Analysis In Medical Research" 2nd Edition; Mar 2004.**
Main references (sources)	Wayne W. Daniel: Biostatistics "Basic Concep and Methodology for the Health Sciences" 9 Edition; 2010.
Recommended books and references (scientific journals, reports…)	Specialized Iraqi academic journals biostatistics
Electronic References, Websites	Research, periodicals, and informati technology via the Internet according to cou topics

Course Description Form

75. Course Name:
Helminths
76. Course Code:
MLT23216
77. Semester / Year:
First semester\ second stage \
78. Description Preparation Date:
19\7\2025
79.Available Attendance Forms: official full attendance
Attended only
80.Number of Credit Hours (Total) / Number of Units (Total)
60
81. Course administrator's name (mention all, if more than one name)
M. Sc. Russul Emad
82. Course Objectives
Course Objectives At the end of the semester, the student becomes able to acquire basic knowledge and

skills in the science of helminths, the development of it and the vital activities of each organism

83. Teaching and Learning Strategies

- Lectures
- 1- Conducting practical experiments
- 2- Reading textbooks
- 3- Conducting scientific discussions
- 4- Reading textbooks
- 5- Using (Data Show)

84. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	roduction to helmenths & platyhelmenths	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
2	4	Slide emonstration to genus Taenia	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
3	4	E. granulosus & E. multilocularis.	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
4		V. nana & H. Diminuta	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
5	4	D. caninum & D. Latum	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
6	4	Slide demonstration for schistosoma spp.	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
7	4	Introduction to nematodes (Anchylstoma)	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

8	4	E. vermicularis	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
9	2	Ascaris lumbricoidis & strongloid	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
10	4	Toxocara canis , T cati	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
11	4	Conc. Method & fresh sample for conc. method.	Helminths	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

9. Course evaluation

weekly examination
reports
Homeworks

10. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References 1-Paniker"s Textbook of Medical ParasitologyJAYPEE BROTHERS MEDICAL PUBLISHERS (P) LTD New Delhi • London • Philadelphia • Panama (2013). 2- Helminthology ,D.D MORO Abadan Iran 2012

Course Description Form

85.	Course Name:
Protozoa	
86.	Course Code:

MEL237

87. Semester / Year:

Seconded semester\ second stage \2-26-2025

88. Description Preparation Date:

19\7\2025

89. Available Attendance Forms: official full attendance

Attended only

90. Number of Credit Hours (Total) / Number of Units (Total)

60

91. Course administrator's name (mention all, if more than one name)

M. Sc. Russul Emad

92. Course Objectives

Course Objectives

At the end of the semester, the student becomes able to acquire basic knowledge and skills in the science of protozoa, the development of it and the vital activities of each organism

93. Teaching and Learning Strategies

- Lectures
- 1- Conducting practical experiments
- 2- Reading textbooks
- 3- Conducting scientific discussions
- 4- Reading textbooks
- 5- Using (Data Show)

94. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction to ,parasitology Lab deal with instruments	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
2	4	samples collection and solution used in lab	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

3	4	Preservation of stool sample	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
4		G. S.E. for non-parasitic finding	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
5	4	Slide demonstration and lab diagnosis of E. histolytic	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
6	4	Slide demonstration for non-pathogenic amoeba ,	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
7	4	Slide demonstration and lab diagnosis of G. lamblia	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
Slide demonstration and lab diagnosis of G. lamblia	4	Slide demonstration and lab diagnosis of Trichmonus spp	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
Slide demonstration and lab diagnosis of Trichmonu spp	2	Demonstration leishmanias spp	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
10	4	Slide demonstration and lab diagnosis of Trypanosoma brucei	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
11	4	Slide demonstration and lab diagnosis of Trypanosoma cruzi	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
12	4	Plasmodium spp (vivix , ovale	protozoa	Power point use of the display screen, educational	Reports - Mini-workshops - Daily short exams -

		and blood film preparation)		videos, interactive lecture, group discussion	Semester exam - Final exam
13	4	Plasmodium spp (Falciparum and blood film preparation)	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
14	4	Cryptospridium and toxoplasma	protozoa	Power point use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

Course Description Form- Helminthology

11. Course evaluation

weekly examination
reports
Homeworks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References 1-Paniker"s Textbook of Medical ParasitologyJAYPEE BROTHERS MEDICAL PUBLISHERS (P) LTD New Delhi • London • Philadelphia • Panama (2013). 2- Helminthology ,D.D MORO Abadan Iran 2012

95. Course Name:
Helminthology
96. Course Code:
97. Semester / Year:
Autumn semester
98. Description Preparation Date:
July2025
99. Available Attendance Forms: official full attendance
100. Number of Credit Hours (Total) / Number of Units (Total)
30 hours
101. Course administrator's name (mention all, if more than one name)

Dr. Mohammed,mohammed
Assistant lecturer Russel Imad

102. Course Objectives

A Helminthology course aims to equip students with the knowledge and skills to understand, ident and manage parasitic worm infections, known as helminths, in humans and animals. Key objectiv include learning about helminth morphology, life cycles, host-parasite interactions, and diagnos techniques. Additionally, the course often covers control and prevention strategies for helmint diseases

103. Teaching and Learning Strategies

Active learning strategies have become indispensable tools in the undergraduate natural sciences curricula across the US 7, 8. These teaching strategies are crucial for developing critical and higher order thinking skills among students, with many experts rendering the traditional lectern as antiquated and ineffective .In an active learning setting, students apply the scientific method to broad questions and, in doing so, improve their problem-solving skills while at the same time

104. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		Required learning outcomes for helminthology, the study of parasitic worms, typically include the ability to identify, classify, and understand the biology and life cycles of various helminths, as well as their impact on human and animal health. Students should also be able to diagnose parasitic infections, understand	Introduction	A multi-faceted approach incorporating virtual reality, game-based learning, and interactive simulations can enhance the teaching of helminthology. These methods engage students, improve knowledge retention, and offer a dynamic way to understand complex concepts like parasite life cycles and host-parasite interactions	n helminthology, evaluation methods should assess both theoretical knowledge and practical skills, including observation, identification, and application of parasitological principles. A comprehensive approach often combines theoretical exams, practical assessments, and continuous evaluation. Feedback and self-assessment are also crucial for student improvement

		transmission routes, and evaluate treatment and control strategies			
2		As above	Cestodes	As above	As above
3		As above	Cestodes	As above	As above
4		As above	Cestode	As above	As above
5		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
6		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
7		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
8		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
9		As above	**NEMATODES (ROUND WORMS)**	As above	As above
10		As above	**NEMATODES (ROUND WORMS)**	As above	As above
11		As above	**NEMATODES (ROUND WORMS)**	As above	As above
12		As above	**LARVA MIGRANS**	As above	As above
13		As above	**INTESTINAL NEMATODES WITHOUT TISSUE STAGE**	As above	As above
14		As above	**TISSUE NEMATODES**	As above	As above
15		As above	Medical Entomology	As above	As above

13. Course evaluation

weekly examination
reports
Homeworks

14. Learning and Teaching Resources

Required textbooks (curricular books, if any) ATLAS OF MEDICAL PARASITOLOGY Shiba Kumar Ra PDFDrive.com) • Clinical Parasitology_ A Practical Approach (PDFDrive.com) • Essentials of Medical Parasitology (PDFDrive.com) • II Bacteriology III Mycology IV Virology V Parasitology V Organ System Infections (PDFDrive.com) • Medical Parasitology_ A Textbook (PDFDrive.com) • Paniker's Textbook of MEDICAL PARASITOLOGY (PDFDrive.com • parasitology for medical and clinical laboratoryprofessionals(PDFDrive.com) (1) • Textbook MEDICAL PARASITOLOGY Textbook of MEDICAL PARASITOLOGY (PDFDrive.com	
Main references (sources) ATLAS OF MEDICAL PARASITOLOGY Shiba Kumar Ra PDFDrive.com) • Clinical Parasitology_ A Practical Approach (PDFDrive.com) • Essentials • II Bacteriology III Mycology IV Virology V Parasitology V Organ System Infections (PDFDrive.com) • Medical Parasitology_ A Textbook (PDFDrive.com) •Paniker's Textbook of MEDICAL PARASITOLOGY PDFDrive.com • parasitology for medical and clini laboratoryprofessionals(PDFDrive.com) (1) • Textbook MEDICAL PARASITOLOGY Textbook of MEDIC PARASITOLOGY (PDFDrive.com	
Recommended books and references (scientific journals, reports...) ATLAS OF MEDICAL PARASITOLOGY Shiba Kumar Ra PDFDrive.com) • Clinical Parasitology_ A Practical Approach (PDFDrive.com) • Essentials of Medical Parasitology (PDFDrive.com) • II Bacteriology III Mycology IV Virology V Parasitology V Organ System Infections (PDFDrive.com) • Medical Parasitology_ A Textbook (PDFDrive.com) • Paniker's Textbook of MEDICAL PARASITOLOGY (PDFDrive.com • parasitology for medical and clinical laboratoryprofessionals(PDFDrive.com) (1) • Textbook of MEDICAL PARASITOLOGY Textbook of MEDICAL PARASITOLOGY (PDFDrive.com	
Electronic References, Websites J. of parasitology WHO bulletin	

Course Description Form- Protozoology

105. Course Name:
Protozoology

106. Course Code:
107. Semester / Year:
Spring semester
108. Description Preparation Date:
July 2025
109. Available Attendance Forms: official full attendance
110. Number of Credit Hours (Total) / Number of Units (Total)
30 hours
111. Course administrator's name (mention all, if more than one name)
112. Course Objectives
The primary objective in teaching protozoology is to provide students with comprehensive understanding of protozoan parasites, their biology, and their impa on human and animal health. This includes learning about their classification, l cycles, pathogenicity, diagnosis, and treatment of protozoan infections. Additiona the course aims to equip students with the skills to identify protozoa, understand ho parasite interactions, and apply this knowledge to address parasitic diseases.
113. Teaching and Learning Strategies
Effective teaching strategies for protozoology include incorporating inclusive practices, encouraging learning from experience, utilizing visual aids and graphic organizers, promoting active and inquiry-based learning, and ensuring clear learning goals and continuous assessment. These strategies aim to enhance student engagement, understanding, and retention of information in this complex field.

114. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	In protozoology, required learning outcomes typically include understanding the biology, life cycles, and pathogenicity of protozoa, as well as diagnostic techniques, treatment strategies, and the impact of these	Introduction	Effective teaching of protozoology combines theoretical knowledge with practical application, incorporating diverse learning methods to cater to different learning styles. A combination of lectures, small group discussions, laboratory work (including microscopy), and case studies can be used to enhance	In protozoology, evaluation methods encompass a range of approaches to assess student learning, including written exams, practical assessments, and continuous evaluation.

		parasites on human and animal health. Students should also develop skills in practical laboratory identification, research, and communication of scientific information		student understanding. Active learning strategies, such as collaborative inquiry and multimedia presentations, can further engage students and improve their critical thinking and problem-solving skills	Written exams may include multiple-choice questions, short-answer questions, and case studies, testing both theoretical knowledge and the ability to apply it. Practical assessments involve hands-on experience with protozoa, such as identifying organisms under a microscope or performing staining techniques. Continuous evaluation can include quizzes, assignments, and participation in class discussions
2	2		CLASSIFICATION OF MEDICAL PARASITOLOGY		
3	2		GENERAL CHARACTERISTICS OF MEDICALLY IMPORTANT PARASITES		
4	2		MEDICAL PROTOZOLOGY		
5	2		AMOEBIASIS		
6	2		OTHER AMEBAE INHABITING THE ALIMENTARY CANAL		
7	2		PATHOGENIC FREE-LIVING AMOEBAE		
8	2		Mastigophora-Giardia		
9	2		TRICHOMONADS (CLASS TRICHOMONADA		
10	2		Other flagellates inhabiting the alimentary canal		
11	2		Haemoflagelates-Leishmania		
12	2		Trypanosoma		
13	2		COCCIDIA (SPOROZOA)-Malaria		
14	2		Toxoplasma and Cryptosporidium		
15	2		Medical Helminthology		

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Introduction to parasitology lab, deal with instruments	4
2	Sample collection and solution used in lab	4
3	Preservation of stool sample	4

4	General stool examination for non parasitic finding	
5	Slide demonstration and lab diagnosis of E. histolytica	4
6	Slide demonstration of non pathogenic amoeba	4
7	Slide demonstration and lab diagnosis of G. lamiblia	4
8	Slide demonstration and lab diagnosis Trichomonas spp	4
9	Demonstration of leishmania spp	4
10	Slide demonstration and lab diagnosis Trypanosoma brucei	4
11	Slide demonstration and lab diagnosis Trypanosoma cruzi	4
12	Plasmodium spp . (vivax , ovale and blood film preparation)	4
13	Plasmodium spp (P. falciparum and blood film preparation)	4
14 15	Plasmodium spp (P. falciparum and blood film preparation) Cryptosporidium & toxoplasma	4

15. Course evaluation

weekly examination
reports
Homeworks

16. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Required textbooks (curricular books, if any)

ATLAS OF MEDICAL PARASITOLOGY Shiba Kumar Ra PDFDrive.com) • Clinical Parasitology_ A Practical Approac PDFDrive.com)

• Essentials of Medical Parasitology (PDFDrive.com)

• II Bacteriology III Mycology IV Virology V Parasitology VI Or System Infections (PDFDrive.com)

• Medical Parasitology_ A Textbook (PDFDrive.com)

• Paniker's Textbook of MEDICAL PARASITOLOGY PDFDrive.com • parasitology for medical and clin laboratoryprofessionals(PDFDrive.com) (1) • Textbook

MEDICAL PARASITOLOGY Textbook of MEDIC PARASITOLOGY (PDFDrive.com	
Main references (sources) Required textbooks (curricular books, if any) ATLAS OF MEDICAL PARASITOLOGY Shiba Kumar Ra PDFDrive.com) • Clinical Parasitology_ A Practical Approac PDFDrive.com) • Essentials of Medical Parasitology (PDFDrive.com) • II Bacteriology III Mycology IV Virology V Parasitology VI Org System Infections (PDFDrive.com) • Medical Parasitology_ A Textbook (PDFDrive.com) • Paniker's Textbook of MEDICAL PARASITOLOGY PDFDrive.com • parasitology for medical and clin laboratoryprofessionals(PDFDrive.com) (1) • Textbook MEDICAL PARASITOLOGY Textbook of MEDIC PARASITOLOGY (PDFDrive.com	
Recommended books and references (scientific journals, reports…) Required textbooks (curricular books, if any) ATLAS OF MEDICAL PARASITOLOGY Shiba Kumar Rai (PDFDrive.com) • Clinical Parasitology_ A Practical Approach (PDFDrive.com) • Essentials of Medical Parasitology (PDFDrive.com) • II Bacteriology III Mycology IV Virology V Parasitology VI Organ System Infections (PDFDrive.com) • Medical Parasitology_ A Textbook (PDFDrive.com) • Paniker's Textbook of MEDICAL PARASITOLOGY (PDFDrive.com • parasitology for medical and clinical laboratoryprofessionals(PDFDrive.com) (1) • Textbook of MEDICAL PARASITOLOGY Textbook of MEDICAL PARASITOLOGY (PDFDrive.com	
Electronic References, Websites J. of parasitology WHO bulletin	

Course Description Form

115. Course Name:
Diagnostic Parasitology
116. Course Code:
MLT47237
117. Semester / Year:
Spring Semester
118. Description Preparation Date:
17 / 7 / 2025
119. Available Attendance Forms: official full attendance
In-person only
120. Number of Credit Hours (Total) / Number of Units (Total)
60 hours / 3 units
121. Course administrator's name (mention all, if more than one name)
Mustafa Faris Hussein
122. Course Objectives
General Objective: To provide the student with a broad and updated understanding of parasitology, including the natural and unnatural habitats of parasites, as well as the changes that occur during infections with various diseases. **Specific Objective:** To establish a solid foundation of knowledge in parasitology, enabling the student to keep up with the medical community they will work with after graduation in hospitals.
123. Teaching and Learning Strategies
• Lectures • Conducting practical experiments • Reading textbooks • Conducting scientific discussions • Performing practical experiments in the laboratory • Reading textbooks • Using data show (projector)

124. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4 hours	Preparing students and specialists to	Methods of laboratory diagnosis include: -	PowerPoint presentations,	Theoretical and practical exams and quizzes

		apply theoretical knowledge in real clinical and laboratory scenarios	Preparation and detection of parasite in thick and thin blood Smear -Quantitative Buffy Coat(QBC) test - Non microscopic test - Rapid Diagnostic Test(RDTs).	Videos, In-person lectures	
2	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Preparation of stains: Geimsa stain, Leishman stain and Iron-hematoxylin))	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
3	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Laboratory diagnosis of Taenia saginata & T.solium -Differentiate between both species in laboratory)	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
4	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	The use special technique in the examination of urine sample (Filtration by Schisto-Kit) as a direct method for diagnosis of Schistosoma haematobium	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
5	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Modified Kato-Katz technique for examination of thick smear.	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
6	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Harada-mori technique for cultivation of hook worm and detection of rhabditiformand filariform larvae	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
7	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Baermann Technique for recover larvae from intestinal or lung parasitic infections - Advantage and Disadvantage	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
8	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Body fluid exam : Methods of Identification of some parasitesaspiration of body fluids	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
9	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Urine examination : detection of some trematodes in urine,colletion of urogenital specimen	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
10	4 hours	Preparing students and specialists to apply theoretical	Sputum examination for larva of lung flukes ,some nemato	PowerPoint presentations,	Theoretical and practical exams and quizzes

		knowledge in real clinical and laboratory scenarios	des larvae and pulmonary abscess	Videos, In-person lectures	
11	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Lab diagnosis of Ascaris lumbricoides : detection of egg ,larvae and adult worm	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
12	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Scotch Tape Preparation -State the proper method for performing the scotch tape preparation Identify parasites by a scotch tape preparation	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
13	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Staining and preservation of some intestinal worms by lacto phenol cotton blue	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
14	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Culture methods : classification and identification of some parasites can be cultured	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
15	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Lischmania spp. (L. tropica (cutanious L.) , L. donovani)	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes

17. Course evaluation

The grade distribution out of 100 is based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Distribution is as follows: 50 marks for coursework (40 marks for exams + 5 marks for student attendance + 5 marks for weekly quizzes) + 50 marks for the final exam.

18. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• **Garcia, L. S.** *Diagnostic Medical Parasitology.* 6th Edition, ASM Press, 2016. • **Markell, R. G., John, D. T., & Petri, W. A.** *Markell and Voge's Medical Parasitology.* 9th Edition, Saunders Elsevier, 2006. • **Paniker, C. K. J.** *Paniker's Textbook of Medical Parasitology.* 7th Edition, Jaypee Brothers Medical Publishers, 2013.
Main references (sources)	.Ash, L. R., & Orihel, T. C

	Atlas of Human Parasitology.5th Edition, ASCP Press, 2007.
Recommended books and references (scientific journals, reports…)	**Chatterjee, K. D.** *Parasitology: Protozoology and Helminthology.* 13th Edition, CBS Publishers, 2009.
Electronic References, Websites	**Roberts, L. S., & Janovy, J.** *Foundations of Parasitology.* 9th Edition, McGraw-Hill, 2013.

Course Description Form

125. Course Name:
Epidemiology
126. Course Code:
MEL 239
127. Semester / Year:
First semester\ second stage
128. Description Preparation Date:
19\7\2025
129. Available Attendance Forms: official full attendance
Attended only
130. Number of Credit Hours (Total) / Number of Units (Total)
1/15
131. Course administrator's name (mention all, if more than one name)
M. Sc. Russul Emad
132. Course Objectives
Course Objectives At the end of the semester, the student becomes able to the principal aim of epidemiology is to identify factors related to the occurrence of disease. Identification of these factors both causal (causation) and risk factors, enable developing a rational basis for prevention (epidemiology, prevention).
133. Teaching and Learning Strategies
- Lectures - 1- Conducting practical experiments - 2- Reading textbooks - 3- Conducting scientific discussions - 4- Reading textbooks - 5- Using (Data Show)
134. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Introduction to Epidemiology	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
2	1	Disease causation and Epidemiologic Triangle	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
3	1	Natural history of disease	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
4	1	Levels of disease prevention	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
5	1	Descriptive Epidemiology	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
6	1	Cross sectional study design (Survey)	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
7	1	Measures of disease in populations	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
8	1	Measurements of morbidity	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
9	1	Measurements of Mortality	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
10	1	Sources of Data and Methods of Data Collection	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
11	1	Epidemic Investigation and Management	Epidemiology	Theoretical use of the display screen,	Reports - Mini-workshops - Daily short exams -

				educational videos, interactive lecture, group discussion	Semester exam - Final exam
12	1	Types of epidemics	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
13	1	Levels of Disease Occurrence	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
14-15	1	Steps in Epidemic i Investigation	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

19. Course evaluation

weekly examination
reports
Homeworks

20. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Victor. Schoenbach & Wayne.D. Rosamond. (2000).Understanding the fundamentals of Epidemiology 2. Springer. (2009). Epidemiology and biostatics: an introduction to clinical research. 3. CDC. (2012). Principles of Epidemiology in public health practice. Self study course.

Course Description Form

135. Course Name:
Genetic engineering
136. Course Code:
MEL440
137. Semester / Year:
one Semesters
138. Description Preparation Date:
17 / 7 / 2025

139. Available Attendance Forms: official full attendance

In-person only

140. Number of Credit Hours (Total) / Number of Units (Total)

60 hours / 3 units

141. Course administrator's name (mention all, if more than one name)

Zaedoon Monaam Mohammed

142. Course Objectives

Understand the basic concepts of genetic engineering and their evolution over time.

Learn about the technologies used in genetic engineering, such as CRISPR-Cas9 and reverse transcriptase.

Explore the applications of genetic engineering in various fields, such as agriculture, medicine, and the environment.

Understand the ethical and social implications of genetic engineering and discuss the challenges and concerns associated with it.

Evaluate policies and legislation related to genetic engineering in various countries.

Apply the concepts and techniques learned to solve practical and research problems related to genetic engineering.

143. Teaching and Learning Strategies

- Lectures
- Conducting practical experiments
- Reading textbooks
- Conducting scientific discussions
- Performing practical experiments in the laboratory
- Reading textbooks
- Using data show (projector)

144. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hours	Introduction to Genetic Engineering	Aids and blood transfusion	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
2	2 hours	Basics of Molecular Biology	Types of anticoagulants use in hematology	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
3	2 hours	Recombinant DNA Technology	Autologus blood transfusion	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes

4	2 hours	Gene Cloning Techniques	Anti human globulin tes	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
5	2 hours	Genomic Libraries and Screening	Hemolytic anemia testing	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
6	2 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Homeostasis & bleeding disorders	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
7	2 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Platelets disorders - testing of Platelets	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
8	2 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Coagulating disorders and testing	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
9	2 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Tests of haemostatic function	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
10	2 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Sputum examination for larva of lung flukes ,some nemato des larvae and pulmonary abscess	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
11	2 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Acquired coagulation disorders	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
12-13	2 hours	Genetic Engineering in Medicine	Autosomal dominant inheritance	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes

14-15	2 hours	Genome Editing and Precision Medicine	Coombes test	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes

Course Description Form

21. Course evaluation

The grade distribution out of 100 is based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Distribution is as follows: 50 marks for coursework (40 marks for exams + 5 marks for student attendance + 5 marks for weekly quizzes) + 50 marks for the final exam.

22. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References Alberts B, Johnson A, Lewis J, et al. Molecular Biology of the Cell. 6th edition. Garland Science; 2014. (ISBN-13: 978-0815344322) Watson JD, Baker TA, Bell SP, et al. Molecular Biology of the Gene. 7th edition. Pearson; 2013. (ISBN-13: 978-0321762436) Klug WS, Cummings MR, Spencer CA, et al. Concepts of Genetics. 12th edition. Pearson; 2014. (ISBN-13: 978-0321948915) Brown T, Gene Cloning and DNA Analysis: An Introduction. 7th edition. Wiley; 2016. (ISBN-13: 978-1119072560) Watson JD, Hopkins NH, Roberts JW, et al. Molecular Biology of the Gene. 5th edition. Cold Spring Harbor Laboratory Press; 2003. (ISBN-13: 978-0805395921)
Main references (sources)	Transfusion Medicine: A Clinical Guide" by Jeffrey McCullough, Edward L. Snyder, and Bjarte G. Solheim. This clinical guide covers transfusion medicine topics relevant to healthcare professionals involved in patient care, including transfusion thresholds, transfusion-transmitted infections, and special patient populations.
Recommended books and references (scientific journals, reports…)	molecular Medicine: A Clinical Guide" by Jeffrey McCullough, Edward L. Snyder, and Bjarte G. Solheim.

145. Course Name:
Histopathology
146. Course Code:
MLT35226
147. Semester / Year:
Autumn and Spring semester
148. Description Preparation Date:

6 March 2025

149. Available Attendance Forms:

Yes

150. Number of Credit Hours (Total) / Number of Units (Total)

3

151. Course administrator's name (mention all, if more than one name)

Name: Ass. Lect. Mohammed Ismael Majeed
Email: mohammed.ismael@gau.edu.iq

152. Course Objectives

Specific Learning Objectives At the end of the course, Establish a good information base on pathol and techniques for preparing, staining and preserving tissue sections so that the student can keep pa with the medical community that he will live with after graduation in hospitals.

153. Teaching and Learning Strategies

Practical skills in Clinical Immunology

a. Clinical examination with special reference to histopathology.
b. Rational use and interpretation of tissues and organs functions.
c. Diagnose the abnormal tissues in organs.
e. Practical experience in using microscope investigation skills.

154. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-15	45 hr.		1 Introduction, cell constituents. Inflammatio Repair &Degeneration Ac Inflammation. 2 3 Chroni Inflammation. 4 Repair, healing &Regeneration 5 Retrograde, changes, Degeneration 6 Atrophy Necrosis, cloudy swelling Gangrene. 8 Criteria used cytopathological diagnosis cancer. Changes in the cytoplasm in malignancy Changes in the nucleus i malignancy. 9 10 Changes cell as a general in malignar 11 Nomenclature of tumors Classification of tumors Fixation &Fixatives Theoretical aspects of Fixat Most common fixatives i common use. 13 Fixation special substances Speciali Techniques for individua tissue &bfixation Arte fact Tissue processing Fixatic ,dehydration ,clearing ,embedding.	Lecture Power point	Quizzes and br storming

155. Course Evaluation

60%

156. Learning and Teaching Resources

References 1- Robbins, Stanley (2010). Robbins and Co pathologic basis of disease (8th ed.). Philadelp Saunders/Elsevier. 2- Carson, Freida L; Christa Hladik (20

Histotechnology: A Self-Instructional Text (3rd ed.). H Kong.	
Google scholar WHO site	

Course Description Form

157. Course Name:
Medical microbiology
158. Course Code:
MEL 232
159. Semester / Year: Semester
Semester
160. Description Preparation Date:
20-7-2025
161. Available Attendance Forms: official full attendance
official full attendance
162. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 30) / Number of Units (Total 30)
163. Course administrator's name (mention all, if more than one name)
Professor doctor tareq Jaafar Aljandeel

164. Course Objectives

Course Objectives

Subjects Objectives

The student be able to know the pathogen microbes, how to diagnose them, and the pathology that they cause and control them.

Special Objectives That the student be able to know the pathogen microbes (bacteria, fungi, viruses, and primary) that infect the different body systems, their epidemics and symptoms, how to control each disease, and study the body‟s resistance to the studied diseases. To know the epidemiology and symptoms of microbial diseases and to control each disease.

165. Teaching and Learning Strategies

1- **Lectures**

2- **Conducting practical experiments**

3- **Reading textbooks**

4- **Engaging in scientific discussions**

5- **Performing laboratory experiments**

166. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Gram positive spore forming bacilli (Clostridium and Bacillus)	2	official full attendance	***Exams***
2		Gram positive non spore forming bacilli (Listeria and corynbacterium) Gram negative cocci: Neiseria	2	official full attendance	***Exams***
3		Gram positive non spore forming bacilli	2	official full attendance	*Exams*

		(Listeria and corynbacterium) Gram negative cocci: Neiseria			
4		Gram positive non spore forming bacilli (Listeria and corynbacterium) Gram negative cocci: Neiseria	2	official full attendance	*Exams*
5		Enteric Gram negative rods: E. coli, Klebsiella, Proteus, Pseudomonas, Acinetobacter, Shigella and salmonella.	2	official full attendance	*Exams*
6		Enteric Gram negative rods: E. coli, Klebsiella, Proteus, Pseudomonas, Acinetobacter, Shigella and salmonella.	2	official full attendance	*Exams*
7		Yersinia.	2	official full attendance	*Exams*
8		Vibrio.	2	official full attendance	*Exams*
9		Campylobacter and Helicobacter.	2	official full attendance	*Exams*
10		Haemophilus, Bordetella and Brucella	2	official full attendance	*Exams*
11		Chlamydia and Spirochaetes	2	official full attendance	*Exams*
12		Mycobacterium	2	official full attendance	*Exams*

13		Introduction to Medical Virology	2	official full attendance	*Exams*
14		Mycology	2	official full attendance	*Exams*
15		Mycology	2	official full attendance	*Exams*

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Microbial sensitivity to antibiotic.	2
2	Microscopy and data analysis.	2
3	Microscopy and data analysis.	2
4	Microscopy and data analysis.	2
5	Culturing of selective and deferential media. API system.	
6	Culturing of selective and deferential media. API system.	2
7	Microbial sensitivity to antibiotic.	2
8	Microbial sensitivity to antibiotic.	2
9	Microscopy and data analysis.	2
10	Microscopy and data analysis.	2
12	Microscopy and data analysis.	2
13	Bacterial examination of water or food.	2
14	Medical Mycology	2
15	Medical Mycology	2

23. Course evaluation

weekly examination
reports
Homeworks

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	

Main references (sources)	***References*** 1- Jawetz Melnick&Adelbe Medical Microbiology 26editi June 8, 2014
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

167. Course Name:
Medical microbiology
168. Course Code:
MEL231
169. Semester / Year: Semester
Semester
170. Description Preparation Date:
20-7-2025
171. Available Attendance Forms: official full attendance
official full attendance
172. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 30) / Number of Units (Total 3)
173. Course administrator's name (mention all, if more than one name)
Professor doctor tareq Jaafar Aljandeel
174. Course Objectives
Course Objectives The student be able to know the pathogen microbes, how to diagnose them, and t pathology that they cause and control them. Special Objectives That the student be able to know the pathogen microbes (bacter fungi, viruses, and primary) that infect the different body systems, their epidemics a symptoms, how to control each disease, and study the body‟s resistance to the studi diseases. To know the epidemiology and symptoms of microbial diseases and control each disease. To know the epidemiology and symptoms of microbial diseas and to control each disease. That the student be able to know the pathogen microb (bacteria, fungi, viruses, and primary) that infect the different body systems, th epidemics and symptoms, how to control each disease, and study the body‟s resistan to the studied diseases. Also, to know the epidemiology and symptoms of microb diseases and to control each disease.

175. Teaching and Learning Strategies

1- **Lectures**

2- **Conducting practical experiments**

3- **Reading textbooks**

4- **Engaging in scientific discussions**

5- **Performing laboratory experiments**

176. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction	2	official full attendance	***Exams***
2		Classification of bacteria	2	official full attendance	***Exams***
3		Structure and function of bacteria	2	official full attendance	***Exams***
4		Growth and death of bacteria	2	official full attendance	***Exams***
5		Culturing of bacteria and media types	2	official full attendance	***Exams***
6		Bacterial Physiology (Bacterial metabolism)	2	official full attendance	***Exams***
7		Nutrient cycles and regulation	2	official full attendance	***Exams***
8		Bacterial genetics. Genetic material	2	official full attendance	***Exams***
9		Plasmids, replication, mutation and genetic recombination.	2	official full attendance	***Exams***
10		Microbial virulence	2	official full attendance	***Exams***

		factors and pathogenesis of bacterial infection			
11		Microbial virulence factors and pathogenesis of bacterial infection	2	official full attendance	***Exams***
12		Microflora	2	official full attendance	***Exams***
13		Chemotherapy and antibiotic resistance.	2	official full attendance	***Exams***
14		Vaccination.	2	official full attendance	***Exams***
15		Gram positive cocci: Staphylococcus, Streptococcus and enterococcus	2	official full attendance	***Exams***

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Orientation microbiology lab	2
2	Sterilization	2
3	disinfection	2
4	The microscope	2
5	Media preparation	
6	Aseptic technique and culturing microbes. Mixed culture (isolating microbes from body and environment).	2
7	Aseptic technique and culturing microbes. Mixed culture (isolating microbes from body and environment).	2

8	Preparing streak plates of single bacterial strain. Preparing streak plates to generate single colonies of strains from a mixed culture	2
9	Growth on different media	2
10	Growth on different media	2
11	Study colonial morphology and staining. Gram and other staining techniques	2
12	Study colonial morphology and staining. Gram and other staining techniques	2
13	Study colonial morphology and staining. Gram and other staining techniques	2
14	Viable counts. -Growth curve from liquid medium.	2

25. Course evaluation

weekly examination
reports
Homeworks

26. Learning and Teaching Resources

Required textbooks (curricular books, if any)	***References*** 1- Jawetz Melnick & Adelbergs Medical Microbiology 26edition June 8, 2014.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

177. Course Name:
Molecular Biology
178. Course Code:
MLT23214
179. Semester / Year:
The second stage is one semester, with an average of 15 lectures.
180. Description Preparation Date:

17/7/2025

181. Available Attendance Forms: official full attendance

My presence only

182. Number of Credit Hours (Total) / Number of Units (Total)

Total number of theoretical hours=30
Total number of practical hours=45
Number of units=3

183. Course administrator's name (mention all, if more than one name)

Name: Mayada Hamid Mahdi
Hotmail.co.uk@mayada74

184. Course Objectives

Introducing the student to the components of the molecular structure of different somatic cells to enable the student to prepare for his future work.

185. Teaching and Learning Strategies

Lectures Practical experiments Reading textbooks Conducting scientific discussions Practical experiments in the laboratory Using a projector screen

186. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Introduction in Molecular Biology Structure of DNA & RNA DNA as the vehicle of inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes
3-5	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	DNA replication and transcription	Integrated in-person lecture	Monthly and quarterly exams and quizzes
6-7	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Gene expression and regulation	Integrated in-person lecture	Monthly and quarterly exams and quizzes
8	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Post transcriptional modification	Integrated in-person lecture	Monthly and quarterly exams and quizzes
9-10	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Translation and protein synthesis	Integrated in-person lecture	Monthly and quarterly exams and quizzes

11-13	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Post translation modifications. Inhibitors of translation	Integrated in-person lecture	Monthly and quarterly exams and quizzes
14-15	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Repair of DNA – types of damages, repair	Integrated in-person lecture	Monthly and quarterly exams and quizzes
16-18	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Gene mutation and chromosomal aberrations. Cause of mutation- chemical and physical agents	Integrated in-person lecture	Monthly and quarterly exams and quizzes
19-23	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Recombinant- DNA technology, Role of restriction endonucleases, plasmid and cosmid cloning vectors	Integrated in-person lecture	Monthly and quarterly exams and quizzes
24-27	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Recombinant- DNA technology, Role of restriction endonucleases, plasmid and cosmid cloning vectors	Integrated in-person lecture	Monthly and quarterly exams and quizzes
28-30	2	Understanding the structure and function of DNA and RNA, the mechanisms of gene expression, and associated molecular techniques	Disorders of Cell growth & carcinogenesis	Integrated in-person lecture	Monthly and quarterly exams and quizzes

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Introduction	3
2	Instruments &materials used in molecular biology lab	3
3	DNA isolation	3
4	Restriction enzymes	
5	Electrophoresis	3
6	Hybridisation techniques	3
7	Southern blotting	3
8	Genetic engineering	3

27. Course evaluation

weekly examination
reports
Homeworks

28. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Molecular Biology of the Gene – by Watson et al. • Lewin's Genes XI – by Krebs et al. • Molecular Cell Biology – by Lodish et al
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Scopus-indexed scientific journals
Electronic References, Websites	

Course Description Form

187. Course Name:

Entomology

188. Course Code:

mlt36235

189. Semester / Year:

Seconded semester\ third stage \2-26-2025

190. Description Preparation Date:

19\7\2025

191. Available Attendance Forms: official full attendance

Attended only

192. Number of Credit Hours (Total) / Number of Units (Total)

3\26

193. Course administrator's name (mention all, if more than one name)

M. Sc. Naseer jumaa

194. Course Objectives

Course Objectives

At the end of the semester, the student becomes able to acquire basic knowledge and skills in the science of entomology, the development of arthropods and insects and the vital activities of each organism

195. Teaching and Learning Strategies

- Lectures
- 1- Conducting practical experiments
- 2- Reading textbooks
- 3- Conducting scientific discussions
- 4- Reading textbooks
- 5- Using (Data Show)

196. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction to Entomology Definition of	entomology	Theoretical use of the display screen, educational videos,	Reports - Mini-workshops - Daily short exams -

		medical and veterinary arthropod science , the harm of insects to human and animals		interactive lecture, group discussion	Semester exam - Final exam
2	2	Insects as intermediate host and vector of pathogenic microbes that causing diseases	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
3	2	Types of mouth parts in Arthropods, microorganisms transmitted by arthropods	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
4	2	Order : dipetra , culex , anopheles & ades , medical importance and control	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
5	2	* Classification of insects by order * Identify the diagnostic characteristics of each order | Introduction to insect order classification * Importance of classification * Basic principles of insect classification	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
6	2	Order : dipetra Phlebotomus sp , parasites transmitted by it , leishmaniasis and control	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
7	2	Order : dipetra ,	entomology	Theoretical use of the display screen,	Reports - Mini-workshops - Daily short exams -

		Glossinia sp , medical importance , African trypanosomiasis and control		educational videos, interactive lecture, group discussion	Semester exam - Final exam
8	2	Order : dipetra , Triatoma infestan Medical importance American trypanosomiasis (chagas disease)	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
9	2	Black flyies , medical importance ,river blindness , control	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
10	2	Musca domestica House fly , medical importance , control	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
11	2	types of cockarge periplaneta spp , medical importance , control	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
12	2	Types of pedeculusis , medical importance , diagnosis ,	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
13	2	scabies disease and diagnosis , control	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
14	2	* Comprehensive review of course concepts * Final exam preparation | Year-over-year review	entomology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
15	2	* Comprehensive course evaluation * Student presentations or a	entomology	Theoretical use of the display screen, educational videos, interactive lecture,	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

		simple research project		group discussion	

29. Course evaluation

weekly examination
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30. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Imms' General Textbook of Entomology – O. W. Richards & R. G. Davies Introduction to Insects – Borror, Triplehorn, and Johnson Medical Microbiology (Jawetz, Melnick & Adelberg's)
Main references (sources)	Medical Entomology for Students – Mike Service Imms' General Textbook of Entomology – O. W. Richards & R. G. Davies Introduction to Insects – Borror, Triplehorn, and Johnson Medical Microbiology (Jawetz, Melnick & Adelberg
Recommended books and references (scientific journals, reports…)	. Articles in PubMed Keywords: "Insect vector diseases", "intermediate host insects" WHO Vector Control Manuals and Reports
Electronic References, Websites	https://www.ncbi.nlm.nih.gov/books/ https://www.cdc.gov/ncezid/dvbd/index.html

Course Description Form

197. Course Name:
Methods of research
198. Course Code:
HMT36231
199. Semester / Year:
Seconded semester\ third stage \2-26-2025
200. Description Preparation Date:
19\7\2025
201. Available Attendance Forms: official full attendance
Attended only
202. Number of Credit Hours (Total) / Number of Units (Total)

2\30

203. Course administrator's name (mention all, if more than one name)

M. Sc. Naseer jumaa

204. Course Objectives

Course Objectives

The course introduces the students to the world of research by providing them with working knowledge of the concepts and r conceptualization and conduct of research. It covers topics on the nature of research, the research problem, related literature, methodology, sampling, instrumentation, data collection, data presentation, data analysis and interpretation, writing the summ conclusions and recommendations, the research report and evaluating the research report

205. Teaching and Learning Strategies

- Lectures
- 1- Conducting practical experiments
- 2- Reading textbooks
- 3- Conducting scientific discussions
- 4- Reading textbooks

206. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method
1	2	**Introduction and Basic Concepts in Research**	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion
2	2	**The Research Problem**	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion
3	2	**Related Literature**	**Methods of research**	Theoretical use of the

				display screen, educati nal videos, interact ve lecture, group discuss on
4	2	**Research Methodology**	**Methods of research**	Theore cal use of t e display screen, educati nal videos, interact ve lecture, group discuss on
5	2	Causal-Comparative research Experimental Research Definitions Experimental designs Quasi-experimental designs Qualitative Research Respondents of the Study Target Population Sampling	**Methods of research**	Theore cal use of t e display screen, educati nal videos, interact ve lecture, group discuss on
6	2	Guidelines in Writing the Respondents of the Study The Research Instruments/Tools of Research Educational Tests Questionnaire Opinionnaire Interview Observation Rating Scale	**Methods of research**	Theore cal use of t e display screen, educati nal videos, interact ve lecture, group discuss on
7	2	Reliability and Validity of Research Tools Guidelines in Constructing Research Instruments Guidelines in Writing the Research Instruments Guidelines in Writing Data Gathering Procedures Methods Used in the Collection of Data Guidelines in Writing the Method of Scoring and Interpretation Guidelines in Writing the Statistical Treatment of Data	**Methods of research**	Theore cal use of t e display screen, educati nal videos, interact ve lecture, group discuss on
8	2	The Hypothesis Sampling Population and Sample Overview of the Research Process Hindrances Encountered in Research	**Methods of research**	Theore cal use of t e display screen, educati nal videos, interact ve lecture, group discuss on
9	2	Research Hypothesis and Null Hypothesis Theoretical/Conceptual Framework	**Methods of research**	Theore ical use of he

		Scope and Delimitation of the Study Significance of the Study Definition of Terms.		display screen, educat onal videos, interac ive lecture group discuss on
10	2	**Data Presentation, Analysis, and Interpretation** Presentation of Data Definition Ways of Presenting Data Data Analysis Descriptive Data Analysis Inferential Data Analysis Computer Data Analysis Interpretation of Data	**Methods of research**	Theore ical use of he display screen, educat onal videos, interac ive lecture group discuss on
11	2	**Writing the Summary, Conclusion and Recommendation** Guidelines in Writing the Summary Guidelines in Writing the Conclusion Guidelines in Writing the Recommendation Methods of Research Syllabus	**Methods of research**	Theore ical use of he display screen, educat onal videos, interac ive lecture group discuss on
12	2	**Writing the Summary, Conclusion and Recommendation** Guidelines in Writing the Summary Guidelines in Writing the Conclusion Guidelines in Writing the Recommendation Methods of Research Syllabus	**Methods of research**	Theore ical use of he display screen, educat onal videos, interac ive lecture group discuss on
13	2	**The Research Report** Format of the Research Report The Thesis or Dissertation Style of Writing Reference Form Footnote	**Methods of research**	Theore ical use of he display screen, educat onal videos, interac ive lecture group discuss on

14	2	Bibliography Pagination Tables Figures Evaluating A Research Report Methods of Research Syllabus	**Methods of research**	Theore ical use of he displa screen, educat onal videos interac ive lecture group discuss on
15	2	Comprehensive course evaluation * Student presentations or a simple research project	**Methods of research**	Theore ical use of he displa screen, educat onal videos interac ive lecture group discuss on

31. Course evaluation

weekly examination
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Homeworks

32. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**لايوجد**
Main references (sources)	نالد، س.، وهيدلام، ن. (٢٠٠٨). دليل مناهج البحث: دليل تمهيدي لمناهج البحث الاجتماعي. مركز الاستراتيجيات الاقتصادية المحلية
Recommended books and references (scientific journals, reports…)	لايوجد
Electronic References, Websites	https://www.cles.org.uk/wpcontent/uploads/2011/01/Research-Methods-Handbook.pdf

Course Description Form

207. Course Name:
Hematology
208. Course Code:

MLT35227

209. Semester / Year:

17/7/2025 (Semester course system)

210. Description Preparation Date:

Third-stage curriculum system for one semester, with an average of 15 lectures

211. Available Attendance Forms: official full attendance

My presence only

212. Number of Credit Hours (Total) / Number of Units (Total)

30=Total number of theoretical hours

45 = Total number of practical hours

3= Number of units

213. Course administrator's name (mention all, if more than one name)

Name: Mayada Hamid Mahdi
Hotmail.co.uk@mayada74

214. Course Objectives

The general objective is to give the student a broad and modern idea about hematology and the normal and abnormal ranges of blood formation, in addition to the changes that occur when contracting various diseases.

The specific objective is to establish a sound knowledge base on hematology to enable the student to keep pace with the medical community with which he will live after graduation in hospitals.

215. Teaching and Learning Strategies

Strategy :

Theoretical lectures Surprise exams after each lecture Scientific discussions Conducting various research projects throughout the semester Attempting to address the scientific material in a way that maintains high student concentration through questions and knowledge exchange among students….

216. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Introduction of hematology(definition, importance, general functions of blood)	Powerpoint	Theoretical and practical exams
2	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemopoiesis, erythropoiesis , morphology of RBCs, cell membrane of RBCs andmetabolism of RBCs	Powerpoint	Theoretical and practical exams
3	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemopoiesis, erythropoiesis , morphology of RBCs, cell membrane of RBCs andmetabolism of RBCs	Powerpoint	Theoretical and practical exams
4	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemoglobin (structure, synthesis and levels in blood and in erythrocytes)	Powerpoint	Theoretical and practical exams
5	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Anemia (definition, causes, classification)	Powerpoint	Theoretical and practical exams
6	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Iron metabolism , iron deficiency anemia	Powerpoint	Theoretical and practical exams
7	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Megaloblastic anemia (B12 deficiency, causes and diagnosis) and pernicious anemia	Powerpoint	Theoretical and practical exams
8	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Folatedeficiency (causes, diagnosis)	Powerpoint	Theoretical and practical exams
9	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemolytic anemia	Powerpoint	Theoretical and practical exams
10	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemolytic anemia	Powerpoint	Theoretical and practical exams
11	2	Preparing students and professionals to apply theoretical knowledge in real clinical and	Thalassemia (definitions, types, causes and diagnosis)	Powerpoint	Theoretical and practical exams

		laboratory scenarios.			
12	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Sickle cell anemia	Powerpoint	Theoretical and practical exams
13	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Aplastic anemia	Powerpoint	Theoretical and practical exams
14	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Polycythemia	Powerpoint	Theoretical and practical exams
15	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Review the article	Powerpoint	Theoretical and practical exams
16	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	White blood cells(classification and general functions of each one)	Powerpoint	Theoretical and practical exams
17	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	White blood cells(classification and general functions of each one)	Powerpoint	Theoretical and practical exams
18	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Nonmalignant WBCs diseases (neutrophilia, neutropenia, eosinophilia, eosinopenia, monocytosis)	Powerpoint	Theoretical and practical exams
19	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Disorders of lymphocytes	Powerpoint	Theoretical and practical exams
20	2	Preparing students and professionals to apply theoretical	Malignant diseases of WBCs (Leukemia, definition of it, types,	Powerpoint	Theoretical and practical exams

		knowledge in real clinical and laboratory scenarios.	classification, causes, leukemoid reaction)		
21	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Acute leukemia (acute lymphocytic leukemia , acute myeloid leukemia) causes and diagnosis of each one	Powerpoint	Theoretical and practical exams
22	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Chronic leukemia (chronic lymphocytic leukemia , chronic myeloid leukemia) causes and diagnosis of each one	Powerpoint	Theoretical and practical exams
23	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Lymphoma (Hodgkin's lymphoma , causes, lab. Findings)	Powerpoint	Theoretical and practical exams
24	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Non-Hodgkin's lymphoma , causes and lab.findings	Powerpoint	Theoretical and practical exams
25	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Platelets (morphology and general functions)	Powerpoint	Theoretical and practical exams
26	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemostasis	Powerpoint	Theoretical and practical exams
27	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Bleeding disorders	Powerpoint	Theoretical and practical exams
28	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Bleeding disorders	Powerpoint	Theoretical and practical exams

29	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Arterial thrombosis, venous thrombosis and risk factors	Powerpoint	Theoretical and practical exams
30	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Review the article	Powerpoint	Theoretical and practical exams

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Blood collection	3
2	Anticoagulant	3
3	Normal value of all blood components according to age	3
4	Hb estimation by different methods	3
5	Packed cell volume PCV	3
6	RBCs count (manual) and automated RBCs count	3
7	Red cell indices MCV, MCH, MCHC	3
8	Blood film preparation	3
9	Blood film preparation	3
10	Study of red cell morphology in health and disease	3
11	Inclusion bodies in red blood cells	3
12	Osmotic fragility test and reticulocyte count	3
13	Sickle cell test and electrophoresis	3
14	Erythrocyte sedimentation rate ESR	3
15	Review the article	3
16	Total white blood cell count	3
17	Absolute count of leukocytes	3
18	Differential count of leukocytes	3
19	Eosinophil count	3
20	Blood film of leukemia	3
21	Special stain of leukemia	3
22	Special stain of leukemia	3
23	Platelets count	3
24	Bleeding time	3
25	Clotting time	3
26	Prothrombine time	3
27	Partial Prothrombine time	3
28	Detection of coagulation factors deficiency by coagulometer	3
29	Quality control of laboratory	3
30	**Review the article**	3

33. Course evaluation weekly examination reports Homeworks

34. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	References Hoffbrand‟s essential hematology. A.Victor Hoffbrand and Paul A.H. Moss , 7th edition , Wiley Blackwell.(2016) Hematology in clinical practice. Roberts. S. Hillman and Kenneth A , 5th edition , McGraw Hill Lange medical books.(2011) Dacie and Lewis Practical hematology. S.Mitchell. Lewis and Barbara J. Bain, 10th edition , Churchill Livingstone Elsevier.(2006)
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Journal of Hematology & Oncology Blood Cancer Journal
Electronic References, Websites	Scientific Research Publishing, pubMed

Course Description Form

217. Course Name:
Human genetic
218. Course Code:
MLT36234
219. Semester / Year:
The third stage is one semester, with an average of 15 lectures.
220. Description Preparation Date:
17/7/2025
221. Available Attendance Forms: official full attendance
My presence only
222. Number of Credit Hours (Total) / Number of Units (Total)
Total number of theoretical hours=30 Total number of practical hours=30 Number of units=3
223. Course administrator's name (mention all, if more than one name)
Name: Mayada Hamid Mahdi

224. Course Objectives

The course's objectives are to train students theoretically and practically on the foundations of medical genetics a to impart the latest advanced scientific techniques to them, with the goal of enriching their knowledge of medical genetics, genetics, genetic engineering, and methods of their use in technical medicine.

The specific objectives are to teach students to study genetics and acquire scientific information about the genet material of the human body, including chromosomes, diseases, genetic mutations, methods of detecting them, a the transmission of genetic traits from one generation to another within the same family.

225. Teaching and Learning Strategies

Lectures Practical experiments Reading textbooks Conducting scientific discussions Practical experiments in the laboratory Using a projector screen Learning methods for medical genetics Theoretical lectures and practical applications in the laboratory Clinical case discussions and the use of genetic analysis software…

226. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Cell division	Integrated in-person lecture	Monthly and quarterly exams and quizzes
2	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Mitosis	Integrated in-person lecture	Monthly and quarterly exams and quizzes
3	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Meiosis	Integrated in-person lecture	Monthly and quarterly exams and quizzes
4	2	Understand the genetic basis of diseases and apply genetic	The chromosomes	Integrated in-person lecture	Monthly and quarterly exams and quizzes

		principles to diagnosis and laboratory analysis.	History -structure number karyotyping		
5	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The chromosomes History -structure number karyotyping	Integrated in-person lecture	Monthly and quarterly exams and quizzes
6	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The chromosomal abnormalities	Integrated in-person lecture	Monthly and quarterly exams and quizzes
7	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The chromosomal abnormalities	Integrated in-person lecture	Monthly and quarterly exams and quizzes
8	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The chromosomal abnormalities	Integrated in-person lecture	Monthly and quarterly exams and quizzes
9	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Genetic disease due chromosomal abnormalities	Integrated in-person lecture	Monthly and quarterly exams and quizzes
10	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Genetic disease due chromosomal abnormalities	Integrated in-person lecture	Monthly and quarterly exams and quizzes
11	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Patter of inheritance Mendel's laws	Integrated in-person lecture	Monthly and quarterly exams and quizzes
12	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Patter of inheritance Mendel's laws	Integrated in-person lecture	Monthly and quarterly exams and quizzes
13	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Dominant inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes
14	2	Understand the genetic basis of diseases and apply	Recessive inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes

		genetic principles to diagnosis and laboratory analysis.			
15	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Another type of inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes
16	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The genetic basis of sex X-linked inheritance –y linked inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes
17	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The genetic basis of sex X-linked inheritance –y linked inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes
18	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Sex influenced traits Sex –limited genes	Integrated in-person lecture	Monthly and quarterly exams and quizzes
19	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Mutations –types of mutation –the genetic basis of mutation	Integrated in-person lecture	Monthly and quarterly exams and quizzes
20	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Mutations –types of mutation –the genetic basis of mutation	Integrated in-person lecture	Monthly and quarterly exams and quizzes
21	2	Understand the genetic basis of diseases and apply genetic principles	Mutagens carcinogenic in the environment	Integrated in-person lecture	Monthly and quarterly exams and quizzes

		to diagnosis and laboratory analysis.			
22	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The genetic basis of cancer Cancer &genetics	Integrated in-person lecture	Monthly and quarterly exams and quizzes
23	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	The genetic basis of cancer Cancer &genetics	Integrated in-person lecture	Monthly and quarterly exams and quizzes
24	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Chromosome &cancer	Integrated in-person lecture	Monthly and quarterly exams and quizzes
25	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Oncogenes	Integrated in-person lecture	Monthly and quarterly exams and quizzes
26	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Suppressor cati-oncogeness	Integrated in-person lecture	Monthly and quarterly exams and quizzes
27	2	Understand the genetic basis of diseases and apply genetic principles	Family pedigree, symbols ,determination the type of inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes

		to diagnosis and laboratory analysis.			
28	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Family pedigree, symbols ,determination the type of inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes
29		Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Prenatal diagnosis &genetic counseling Introduction types of prenatal diagnosis	Integrated in-person lecture	Monthly and quarterly exams and quizzes
30	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Genetic counselling	Integrated in-person lecture	Monthly and quarterly exams and quizzes

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Instruments &materials used in medical genetics field	2
2	Laboratory safety	2
3	Introduction to medical genetics (detection of some inherited traits	
4	Introduction to medical genetics (detection of some inherited traits	2
5	Introduction to medical genetics (detection of some inherited traits	2
6	Cell division	2
7	Cell division	2
8-20	Cytogenetic sampling tissue culture harvesting banding (type of bending) karyotyping detection the chromosomal abnormalities	2
21-25	study of family pedigree how to draw a family pedigree study the pedigree	2
26-30	Molecular biology DNA analysis Hybridization, DNA finger printing	2

35. Course evaluation weekly examination reports Homeworks

36. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	References -1Lessard, Juliane C. "Molecular cloning". Methods in Enzymology. 529: 85–98. -2Gardner A , Howell R and Davies T . (2000) ." Human genetics" -3Chopra V L and Nasim A . (1996) Genetic Engineering and biotechnology , Concepts , methods , application -4Daniel L. Hartl, D.L. and Jones , E.W. (2010).Genetics:Principles and Analysis , Fourth Edition. Jones and Bartlett Publishers Internati ,UK.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Nature Genetics The American Journal of Human Genetics
Electronic References, Websites	

Course Description Form

227. Course Name:
Mycology
228. Course Code:
MEL337
229. Semester / Year:
Autumn/ 2025-2026
230. Description Preparation Date:
22/7/2025
231. Available Attendance Forms:
Official Full Attendance
232. Number of Credit Hours (Total) / Number of Units (Total):
60 Hours/ 30 Hours (Theoretical)/ 30 Hours (Practical)
233. Course administrator's name (mention all, if more than one name):
MAY SALEM ABDULLAH
234. Course Objectives

a. Fungal Biology and Diversity:

-Morphology and Structure:

Understanding the basic structures of fungi, including hyphae, spores, and fruiting bodie

-Classification and Taxonomy:

Learning the principles of fungal classification and the major groups of fungi (e.g., Ascomycota, Basidiomycota).

-Physiology and Metabolism:

Studying how fungi obtain nutrients, their metabolic processes, and how they grow and reproduce.

-Genetics and Molecular Biology:

Exploring fungal genetics, including DNA replication, gene expression, and fungal evolution.

-Ecology and Symbiosis:

Understanding the roles fungi play in various ecosystems, including their interactions wi plants (mycorrhizae) and other organisms.

b. Fungal Identification and Cultivation:

-Microscopic Techniques:

Learning how to identify fungi based on their microscopic features, including spore morphology and hyphal characteristics.

-Cultivation Methods:

Developing skills in growing fungi in the lab, including isolating, culturing, and maintaining fungal cultures.

-Diagnostic Techniques:

Understanding methods for identifying fungi in clinical and environmental samples.

c. Fungal Impacts and Applications:

-Human Health:

Learning about fungal diseases (mycoses), their causes, symptoms, diagnosis, and treatment.

-Industrial Applications:

Exploring the use of fungi in various industries, such as food production (e.g., yeast in baking and brewing), biotechnology (e.g., antibiotic production), and bioremediation.

-Environmental Importance:

Understanding the role of fungi in nutrient cycling, decomposition, and their impact on plant health.

d. Advanced Topics:

-Fungal Pathogenesis:

Studying the mechanisms by which fungi cause disease.

-Fungal Genomics and Biotechnology:

Exploring the potential of fungal genomes for various applications.

-Emerging Fungal Threats:

Learning about new and emerging fungal pathogens and their impact on human a environmental health.

235. Teaching and Learning Strategies:

-Lectures.

-Laboratory Sessions.

-Seminars.

- Discussions.

- Data Show.

- Training.

- Research.

236. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**2**	**Defining 'Mycology', history, structure and morphology of fungi, characteristics of fungi in comparison to bacteria and plants, medically important groups of fungi.**	**Introduction to medical mycology, History, general properties of fungi, Epidemiology, grouping into medically important fungi, comparison with bacteria and plants.**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
2	**2**	**Studying how fungi grow and reproduce.**	**Reproduction of Fungi**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
3-5	**6**	**Learning the principles of fungal classification and the major groups of fungi (e.g.,**	**Classification and Pathogenicity of Fungi**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**

		Ascomycota, Basidiomycota). Studying the mechanisms by which fungi cause disease, types of infections, routes of transmission.			
6-7	**4**	**Definition and types, causative agent and diseases, routes of transmission.**	**Superficial Mycosis: Tinea types and Dematiaceous Fungi (Black Fungi), Sporotrichosis and Mycetoma**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
8	**2**	**Definition and types, causative agent and diseases, routes of transmission**	**Cutaneous Mycosis: *Trichophyton spp.*, *Microsporium spp.*, *Epidermophyton spp.***	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
9	**2**	**Definition and types, causative agent and diseases, routes of transmission**	**Subcutaneous Mycosis: Phaeohyphomycosis, Chromoblastomycosis**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
10	**2**	**Definition and types, causative agent and diseases, routes of transmission**	**Infections due to Filamentous Fungi: *Zygomycetes* and Zygomycosis, *Aspergillus* and Aspergillosis, Pneumocystosis and *Pneumocystis carinii***	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
11	**2**	**Definition and types, causative agent and diseases, routes of transmission**	**Opportunistic Mycosis: Infections caused by Yeasts: *Candida* and Candidiasis, *Cryptococcus neoformans* and Cryptococcosis**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**

12	**2**	**Definition and types, causative agent and diseases, routes of transmission. Studying the antibiotics produced by fungi with examples.**	**Opportunistic Mycosis: *Mucor* and *Penicillium*, Antibiotics produced by fungi.**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
13	**2**	**Definition and types, causative agent and diseases, routes of transmission**	**Systemic Mycosis: Coccidioidomycosis and Blastomycosis**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
14-15	**2**	**Definition and types, causative agent and diseases, routes of transmission. Studying antifungals and mycotoxins with examples and mechanisms of action.**	**Histoplasmosis and Paracoccidiomycosis, Antifungal Agents, Mycotoxins**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**

Course description (practical)		
Weeks	**Laboratory sessions & *Clinical requirements***	**Hours**
1	**Specimen Collection, Transport, and Storage**	**2**
2	**Microscopy and Direct Microscope Examination of Clinical Specimens.**	**2**
3-5	**Culture of Fungi and Culture Media, Biochemical Reactions**	**6**
6-7	**Serological Tests, Skin Tests**	**4**
8	**Superficial Mycosis: Laboratory Diagnosis of *Trichophyton spp.*, *Microsporium spp, Epidermophyton spp.***	**2**

9	**Superficial Mycosis: Laboratory Diagnosis of Tinea types and Dematiaceous Fungi (Black Fungi)**	**2**
10	**Opportunistic Fungi: Laboratory diagnosis of *Candida* and *Cryptococcus neoformans***	**2**
11	**Opportunistic Fungi: Laboratory Diagnosis of *Mucor* and *Penicillium***	**2**
12	**Systemic Mycosis: Laboratory Diagnosis of Coccidiomycosis and Blastomycosis**	**2**
13	**Laboratory Diagnosis of Histoplasmosis and Paracoccidiomycosis**	**2**
14	**Antifungal agents (Sensitivity tests).**	**2**
15	**Isolation of Mycotoxins**	**2**

37. **Course evaluation:** 100 Mark distributed according to:
-Weekly and monthly examination
-Reports, seminars, discussions
-Homeworks, attendance.

38. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Mycology a brief review: beautiful fungi by Mohamed Alashram | Dec 7, 2021**
Main references (sources)	**1-Descriptions of Medical Fungi,** **By Sarah Kidd, Catriona L. Halliday, Helen Alexiou, David H. Ellis** **3rd edition.** **CutCut Digital, 2016,** **ISBN 0646951297,** **2-Identifying Fungi,** **by Guy St. Germain and Richard Summerbell | 2010** **Journals:** **1-Mycology.** **2-Journal of Mycology**
Electronic References, Websites	**https://www.britannica.com** **https://www.sceincedirect.com**

Course Description Form

237. Course Name:

Virology

238. Course Code:
MLT323
239. Semester / Year:
Spring/ 2025−2026
240. Description Preparation Date:
20/7/2025
241. Available Attendance Forms: official full attendance
Attend lectures in person
242. Number of Credit Hours (Total) / Number of Units (Total)
30 Hours/ 2 Hours (Theoretical), 2 Hours (Practical)
243. Course administrator's name (mention all, if more than one name)
Assistant Lecturer MAY SALEM ABDULLAH
244. Course Objectives

Understanding Virus Structure and Replication:

-Diversity of Viruses:

Students will learn about the wide range of viral structures and genetic material (DNA or RNA).

-Replication Strategies:

The course will cover the molecular mechanisms by which viruses enter host cells, replicate their genetic material, and assemble new viral particles.

-Viral Taxonomy:

Students will learn about classifying viruses into different groups based on their properties.

Exploring Viral Pathogenesis and Disease:

-Host-Virus Interactions:

The course will examine how viruses interact with their hosts, leading to infection and disease.

-Viral Diseases:

Students will study the pathogenesis of major viral diseases affecting humans, animals, and plants.

-Transmission and Epidemiology:

Understanding how viruses spread and the factors influencing their transmission is crucial.

Developing Diagnostic and Therapeutic Strategies:

-Diagnostic Techniques:

Students will learn about various methods used to detect and identify viruses in clinical and research settings.

-Antiviral Therapies:

The course will cover the development and mechanisms of action of antiviral drugs and vaccines.

-Prevention and Control:

Students will explore strategies for preventing and controlling viral outbreaks, including public health measures.

Addressing Emerging Threats:

-Zoonotic Viruses:

The course will address the role of viruses that can jump from animals to humans a the potential for pandemics.

-Viral Evolution:

Students will learn about how viruses evolve and adapt, potentially leading to new challenges.

Developing Critical Thinking and Research Skills:

-Analyzing Scientific Literature:

Students will learn to critically evaluate research papers and stay up-to-date on the latest developments in virology.

-Formulating Research Questions:

The course will encourage students to identify knowledge gaps and formulate relevant scientific questions.

-Applying Knowledge to New Situations:

Students will be able to apply their understanding of virology to address a range challenges in research, medicine, and public health.

245. Teaching and Learning Strategies:

Lectures:

PowerPoint presentations with images, definitions, summaries, and classifications of viral information can be used to introduce core concepts. Worksheets can provide opportunities for practice.

Classroom Discussions:

Engaging students in discussions about lecture topics and addressing their questions fosters active learning and deeper understanding.

Case Studies:

Analyzing real-world examples of viral diseases through case studies allows students to apply their knowledge and develop problem-solving skills.

Laboratory Work:

Hands-on practical sessions complement the theoretical component. Techniques like cell culture, detection methods, and observation of cytopathic effects enhance practical skills.

Research Activities:

Assigning research projects related to virology enables students to explore specific topics in depth and develop their research skills.

Educational Kits:

Innovative tools like the "Virus Goes Viral" kit, which includes microscope slides of viruses and cells, can provide a visual and interactive learning experience.

Active Learning Approaches:

Incorporating journal clubs, discussions of current research, and critical analysis of preprints encourages higher-order thinking and engagement.

Assessment Methods:

A combination of daily and monthly tests, discussions of scientific reports, and question-and-answer sessions can be used to assess student learning.

Utilizing Visual Aids:

Visual aids like images, diagrams, and videos are crucial for understanding virus structure, replication, and interactions with host cells.

Guest Speakers:

Inviting experts in the field to share their experiences and insights can provide valuable real-world perspectives.

Memorization and Recall:

While not the sole focus, some memorization of key concepts and viral characteristics is necessary for building a foundation in virology.

Problem Solving and Critical Thinking:

Encouraging students to analyze problems, evaluate different perspectives, and propose solutions is essential for developing critical thinking skills.

Communication Skills:

Providing opportunities for students to present their research and participate in discussions enhances their written and oral communication skills.

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	History of the science of virology, defining "Virology" and " Medical Virology", Explaining the properties and structure of viruses	Introduction to Virology, General Properties and Structure of Viruses.	Lecture	Quizzes, Exams, Seminars, Discussions
2	2	Knowing the different groups of viruses and classification systems. -Describing and comparing atypical virus-like agents.	-Classification and Nomenclature of Viruses. - Atypical Virus-like agents (Prions, Defective viruses, Pseudovirion, and Viriods)	Lecture	Quizzes, Exams, Seminars, Discussions
3	2	Studying the genetic structure of viruses (type and structure of nucleic acid) and genetic informations(genome) of viruses including structure, replication strategy, and mutations	Viral Genetic and Viral Replication.	Lecture	Quizzes, Exams, Seminars, Discussions
4	2	Studying the pathogenicity and routes of transmission of different viruses.	Viral Pathogenesis and Routes of Transmission of Viruses.	Lecture	Quizzes, Exams, Seminars, Discussions
5	2	-Understanding the immune reactions (innate and adaptive immunity) following viral infection. Explaining the different laboratory	Immunity & Laboratory Diagnosis of Viruses.	Lecture	Quizzes, Exams, Seminars, Discussions

		diagnostic methods for viruses.			
6	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Herpes viruses**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
7	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Hepatitis Viruses**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
8	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Human Immune Deficiency virus**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
9	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Poxviruses**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
10	**2**	**Defining and explaining the structure, classification,**	**Paramyxoviruses and Orthomyxoviruses**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**

		replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).			
11	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Enteric viruses (Rota, Polio and Reo viruses)**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
12	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Rabies virus**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
13	**2**	**Defining and explaining the structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).**	**Coronavirus**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
14	**2**	**Defining and explaining the structure, classification, replication, infection and replication inside the bacterial cell, and laboratory diagnosis**	**Bacteriophages**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
15	**2**	**-Defining oncogenic viruses and explaining the**	**Oncogenic Viruses, Antiviral**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**

		structure, classification, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available). -Defining and explaining the use of antiviral drugs in treatment or prophylaxis of viral infections, and discussing the types and the protective role of antiviral vaccines.	**drugs and viral vaccines**		

Course description (practical)		
Weeks	**Laboratory sessions & *Clinical requirements***	Hours
1	**Laboratory Safety &Viral Identification, Clinical Samples Collection & Preservation.**	**2**
2	**Direct Examination: Microscopical Examination Electron Microscopy Examination**	**2**
3 4	**-Isolation and Cultivation of Viruses. -Preservation and Titration of Viruses.**	**2**
5	**Immunological Techniques**	**2**
6	**ELISA test**	**2**
7	**Complement fixation test**	**2**
8	**Insito ELA**	**2**
9	**RIA**	**2**
10	**Latex Agglutination**	**2**
11 12	**Neutralization test -Hemagglutination (HA) and Hemagglutination Inhibition tests**	**2**
13	**-Fluorescent Technique -Flow Cytometry**	**2**
14	**-Agar Gel diffusion precipitation test -Rapid Diagnosis of Viruses**	**2**
15	**Molecular Techniques: Nucleic acid extraction, PCR, RT PCR, NASBA and TBA.**	**2**

39. Course evaluation

Weekly and monthly examinations.
Reports.
Seminars.
Discussions.
Homeworks.

40. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Medical Virology: White, D. E., Fenn Frank J.**
Main references (sources)	**Textbook of Medical Virology 2nd Edition by Baijayantimala Mishra (Author)**
Recommended books and references (scientific journals, reports…)	**Journal of Virology**
Electronic References, Websites	**Google scholar, WHO bulletin**

Course Description Form

246. Course Name:
Biochemistry
247. Course Code:
248. Semester / Year:
Semester
249. Description Preparation Date:
250. Available Attendance Forms: official full attendance
251. Number of Credit Hours (Total) / Number of Units (Total)
30/30 hours theory and practical
252. Course administrator's name (mention all, if more than one name)
Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq
253. Course Objectives
Course Objectives **1. Fundamental Understanding of Metabolism** **2. Carbohydrate Metabolism Mastery** **3. Protein and Amino Acid Metabolism Proficiency** **4. Lipid Metabolism Competency** **5. Clinical Enzyme Knowledge** **6. Micronutrient Understanding**
254. Teaching and Learning Strategies

1- Lectures

2- Conducting practical experiments

3- Reading textbooks

4- Conducting scientific discussions

5- Conducting practical experiments in the laboratory

6- Reading textbooks

7- Using (Data show)

255. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	**Introduction to Metabolism and Nutritional Energy**: How the body converts food into energy (ATP) for life.	**Introduction to Metabolism and Nutritional Energy**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
2	2	**Clinical Enzymes**: Understanding enzymes, factors affecting them, and their laws	**Clinical Enzymes**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
3	2	**Carbohydrate Metabolism**: Processes of breakdown and synthesis of sugars to generate or store energy.	**Carbohydrate Metabolism**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
4	2	**Glucose Oxidation (Glycolysis)**: Learning the breakdown of glucose in the cytoplasm to produce immediate energy.	**Glucose Oxidation: Glycolysis**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
5	2	**Citric Acid Cycle (TCA)**: "Energy engine" in mitochondria; converts nutrients to ATP.	**Citric Acid Cycle** **(TCA Cycle / Krebs Cycle)**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
6	2	**Alternative Sugar Metabolism**: Metabolism of fructose and galactose	**Alternative Sugar Metabolism Pathways**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
7	2	**Glycogen Metabolism**: Storage of glucose in	**Glycogen Metabolism**	Personal educational lectures using	• Short examinations • Midterm

		liver/muscles and its retrieval when needed.		Data Show (PowerPoint) program	examination • Final examination
8	2	**Protein and Amino Acid Metabolism**: Protein breakdown and rebuilding of body tissues.	**Protein and Amino Acid Metabolism**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
9	2	**Protein Catabolism and Nitrogen Processing**: Elimination of nitrogen from amino acids via the urea cycle.	**Protein Catabolism and Nitrogen Processing**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
10	2	**Functions of Amino Acids**: Their role as building blocks for proteins and regulators of blood pH.	**Functions of Amino Acids**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
11	2	**Lipid Metabolism**: Breakdown of lipids to produce energy or store them as reserves.	**Lipid Metabolism**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
12	2	**Fatty Acid Metabolism**: Breakdown of fatty acids (via β-oxidation) to generate ATP.	**Fatty Acid Metabolism**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
13	2	**Cholesterol and Lipoproteins**: Transport of lipids in blood and their relationship to heart disease.	**Cholesterol and Lipoproteins**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
14	2	**Balance of salts and trace elements**	**Minerals and Vitamins**	Personal educational lectures using Data Show (PowerPoint)	• Short examinations • Midterm examination • Final examination

				program	
15	2	**Vitamins, their types, and their role**	**Minerals and Vitamins**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	**Introduction to Clinical Biochemistry Laboratory and Safety Procedures**	2
2	**Spectrophotometric Measurement**	2
3	**Estimation of Serum Amylase Activity**	
4	**Estimation of Salivary Amylase Activity**	2
5	**Fasting and Postprandial Blood Glucose**	2
6	**Glucose Tolerance Test (GTT)**	2
7	**Estimation of Serum Cholesterol (Total and High-Density Lipoprotein)**	2
8	**Estimation of Serum Triglycerides**	2
9	**Estimation of Ketone Bodies in Urine**	2
10	**Introduction: Types of Proteins**	2
12	**Estimation of Total Serum Protein**	2
13	**Introduction to Albumin and Its Benefits in the Body**	2
14	**Practical Tests on Previous Experiments**	2
15	**Practical Tests on Previous Experiments**	2

41. Course evaluation

weekly examination

reports

Homeworks

42. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**• lipincotte Biochemistry, Seventh Edition** **• D.M. Vasudevan Biochemistry for Medical Students, Tenth Edition**
Main references (sources)	• **Tietz Textbook of Clinical Chemistry** • **Clinical Chemistry: Techniques, Principles, Correlations** **Harper's Illustrated Biochemistry**

Recommended books and references (scientific journals, reports…)	• *New England Journal of Medicine (NEJM)*: • *The Lancet Diabetes & Endocrinology*: أبحاث
Electronic References, Websites	• www.uptodate.com • https://www.medscape.com/

Course Description Form

256. Course Name:
Biochemistry
257. Course Code:
258. Semester / Year:
Semester
259. Description Preparation Date:
260. Available Attendance Forms: official full attendance
261. Number of Credit Hours (Total) / Number of Units (Total)
30/30 hours theory and practical
262. Course administrator's name (mention all, if more than one name)
Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq
263. Course Objectives
Course Objectives **1- Providing students with a solid scientific background in clinical chemistry general** **2- Developing the student's ability to distinguish between types of biologi variables, whether quantitative or qualitative, and how to utilize this knowled in medical fields.** **3- Study of enzyme tests in the human body and their benefits** **4- Study of water and electrolyte balance in the human body** **5- Study of liver function tests in the human body and their benefits** **6- Study of kidney function tests in the human body and their benefits**
264. Teaching and Learning Strategies
1- Lectures **2- Conducting practical experiments** **3- Reading textbooks**

4- Conducting scientific discussions

5- Conducting practical experiments in the laboratory

6- Reading textbooks

7- Using (Data show)

265. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	*Study to gain complete knowledge about water balance and hormones regulating dehydration*	**Water Balance**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
2	2	*Study to gain complete knowledge about water balance and hormones regulating dehydration*	**Water Balance**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
3	2	**Mineral metabolism** **Role, disorders, tests**	**Mineral Metabolism** **Electrolytes: Sodium (Na), Potassium (K), Chloride (Cl), Magnesium (Mg), Calcium (Ca)**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
4	2	**Mineral metabolism** **Role, disorders, tests**	**Mineral Metabolism** **Trace Elements: Iron (Fe), Copper (Cu), Zinc (Zn), Manganese (Mn)**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
5	2	**Blood gases classification**	**Blood Gases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
6	2	**Knowledge of normal acid-base balance and types of hydrogen ion disorders**	**Acid-Base Balance - Blood pH**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
7	2	**Types of diabetes and its tests**	**Diabetes Mellitus**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
8	2	**Types of diabetes and its tests**	**Diabetes Mellitus**	Personal educational	• Short examinations •

				lectures using Data Show (PowerPoint) program	Midterm examination • Final examination
9	2	**Understanding kidney functions**	**Kidney Functions**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
10	2	**Understanding disorders that occur in the kidneys and monitoring tests that reflect kidney disorders**	**Kidney Function Disorders**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
11	2	**Liver function and its disorders**	**Liver Functions**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
12	2	**Liver function and its disorders**	**Liver Function Disorders**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
13	2	**Lipids and their elevation in the human body and their tests**	**Lipid Disorders**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
14	2	**Types of tumor markers and their importance**	**Tumor Markers**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
15	2	**Types of tumor markers and their importance**	**Tumor Markers**	Personal educational lectures	• Short examinations • Midterm

				using Data Show (PowerPoint) program	examination • Final examination

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	*Estimation of serum Na, K, Li, Ca using: - Flame photometry*	2
2	*Estimation of serum Na, K, Li, Ca using: Ion-selective electrode (ISE)*	2
3 4	*Chemical estimation of serum iron*	2
5	*Chemical estimation of serum calcium*	2
6	*Blood gas estimation and blood pH determination: Use and maintenance of blood gas analyzer*	2
7	*Blood gas estimation and blood pH determination: Proper handling of blood samples for gas analysis*	2
8	*Estimation of glycated hemoglobin HbA1c*	2
9	*Estimation of glycated hemoglobin HbA1c*	2
10	*Liver function tests (LFT): - Alanine aminotransferase (ALT) and Aspartate aminotransferase (AST)*	2
12	*Liver function tests (LFT): - Alkaline phosphatase (ALP) and γ-glutamyl transferase (GGT)*	2
13	*Liver function tests (LFT): - Bilirubin: Total, direct, and indirect*	2
14	*Kidney function tests: - Estimation of blood urea*	2
15	*Kidney function tests: - Estimation of blood creatinine and creatinine clearance*	2

43. Course evaluation

weekly examination
reports
Homeworks

44. Learning and Teaching Resources

Required textbooks (curricular books, if a	• **David L. Nelson; Michael M. Cox. (2017). Lehninger Principles of Biochemistry. Seventh Edition | ©2017 New edition available.** • **John Wiley & Sons Ltd (2018). Peter Ray. Lecture No Clinical Biochemistry - John Wiley & Sons Ltd (2018)**
Main references (sources)	• **Tietz Textbook of Clinical Chemistry** • **Clinical Chemistry: Techniques, Principles, Correlations** **Harper's Illustrated Biochemistry**

Recommended books and references (scientific journals, reports…)	• *New England Journal of Medicine (NEJM)*: • *The Lancet Diabetes & Endocrinology*: أبحاث
Electronic References, Websites	• www.uptodate.com • https://www.medscape.com/

Course Description Form

266. Course Name:
Blood transfusion
267. Course Code:
MEL440
268. Semester / Year:
two Semesters
269. Description Preparation Date:
17 / 7 / 2025
270. Available Attendance Forms: official full attendance
In-person only
271. Number of Credit Hours (Total) / Number of Units (Total)
60 hours / 3 units
272. Course administrator's name (mention all, if more than one name)
Zaedoon Monaam Mohammed
273. Course Objectives
Understand the basics of hematology, its composition, and functions. **Analyze the processes of blood preparation, storage, and transfusion.** **Study blood types and their importance in blood transfusion.** **Understand the mechanism for verifying blood type compatibility between donor and recipient.** **Identify blood transfusion complications and how to manage them.** **Study the techniques and equipment used in blood collection, storage, and transfusion.**
274. Teaching and Learning Strategies
• Lectures • Conducting practical experiments • Reading textbooks • Conducting scientific discussions • Performing practical experiments in the laboratory • Reading textbooks • Using data show (projector)
275. Course Structure

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

1	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Aids and blood transfusion	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
2	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Types of anticoagulants use in hematology	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
3	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Autologus blood transfusion	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
4	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Anti human globulin tes	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
5	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Hemolytic anemia testing	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
6	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Homeostasis & bleeding disorders	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
7	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Platelets disorders - testing of Platelets	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
8	4 hours	Preparing students and specialists to apply theoretical knowledge in	Coagulating disorders and testing	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes

		real clinical and laboratory scenarios			
9	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Tests of haemostatic function	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
10	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Sputum examination for larva of lung flukes ,some nemato des larvae and pulmonary abscess	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
11	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Acquired coagulation disorders	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
12-13	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Autosomal dominant inheritance	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
14-15	4 hours	Preparing students and specialists to apply theoretical knowledge in real clinical and laboratory scenarios	Coombes test	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes

45. Course evaluation

The grade distribution out of 100 is based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Distribution is as follows: 50 marks for coursework (40 marks for exams + 5 marks for student attendance + 5 marks for weekly quizzes) + 50 marks for the final exam.

46. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References

	AABB Technical Manual. This comprehensive manual covers various aspects of blood banking and transfusion medicine, including donor selection, component preparation, transfusion reactions, and quality assurance. "Transfusion Medicine and Hemostasis: Clinical and Laboratory Aspects" by Christine A. Tormey and Beth H. Shaz. This textbook provides in-depth coverage of transfusion medicine, including blood component preparation, transfusion reactions, and management of patients requiring transfusion therapy. "Transfusion Therapy: Clinical Principles and Practice" by Beth H. Shaz, Christopher D. Hillyer, and Toby L. Simon. This book covers the clinical aspects of transfusion therapy, including indications for transfusion, patient evaluation, and management of complications
Main references (sources)	.Ash, L. R., & Orihel, T. C Atlas of Human Parasitology.5th Edition, ASCP Press, 2007.
Recommended books and references (scientific journals, reports…)	Transfusion Medicine: A Clinical Guide" by Jeffrey McCullough, Edward L. Snyder, and Bjarte G. Solheim. This clinical guide covers transfusion medicine topics relevant to healthcare professionals involved in patient care, including transfusion thresholds, transfusion-transmitted infections, and special patient populations.

Course Description Form

276. Course Name:
Diagnostic bacteriology
277. Course Code:
MEL 433
278. Semester / Year: Semester
Diagnostic Bacteriology
279. Description Preparation Date:
20−7−2025
280. Available Attendance Forms: official full attendance
official full attendance
281. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 3) / Number of Units (Total 30)
282. Course administrator's name (mention all, if more than one name)
Professor doctor tareq Jaafar Aljandeel
283. Course Objectives
Course Objectives At the end of this course, the student will be able to satisfactorily diagnose bacteria, as well as be able to administer bacteriological laboratories.

Special Objectives Diagnosis of microorganisms using all available methods stipulated in the brochures of the World Health Organization.

284. Teaching and Learning Strategies

1- **Lectures**

2- Conducting practical experiments

3- Reading textbooks

4- Engaging in scientific discussions

5- Performing laboratory experiments

285. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Antibiotic Susceptibility Tests	3	official full attendance	*Exams*
2		Antibiotic Susceptibility Tests		official full attendance	*Exams*
3		Diagnosis by organ Bloodstream infections	3	official full attendance	*Exams*
4		Diagnosis by organ Bloodstream infections		official full attendance	*Exams*
5		Meningitis and other infections of the central nervous system	3	official full attendance	*Exams*

6		Meningitis and other infections of the central nervous system		official full attendance	*Exams*
7		Bacterial infections of respiratory tract	3	official full attendance	*Exams*
8		Bacterial infections of respiratory tract	3	official full attendance	*Exams*
9		Bacterial Infection of the Urinary Tract Systems	3	official full attendance	*Exams*
10		Bacterial Infection of the Urinary Tract Systems	3	official full attendance	*Exams*
11		Bacterial Infections of the Genital Tract	3	official full attendance	*Exams*
12		Bacterial infections of gastrointestinal tract	3	official full attendance	*Exams*
13		Bacterial infections of gastrointestinal tract	3	official full attendance	*Exams*

14		Bacterial infections of eyes, ears and sinuses	3	official full attendance	*Exams*
15		Bacterial infections of skin, soft tissue & wounds.	3	official full attendance	*Exams*

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	Bacteriology specimen collection and transportation, method of inoculum and isolation of pure culture	2
2	Microscopically: Grams and culture of Genus Staphylococcus spp, General characters, Lab. diagnosis coagulase Columbia BA agar for Campylobacter, sorbitol Mac for verotoxin-producing *E.coli*, CIN (cefulodin, irgasam, novobiocin agar) for *Yersinia enterocolitica* , Robertson's coked meat medium for *Clostridium perfringes*.	2
3	Microscopically: Grams and culture of Genus General characters, Lab. diagnosis, Catalase test, *Streptococcus ssp., enterococci*	2
4	Bacterial microscopic examination and culture of *Neisseria meningitides, H. influenzae,*	2
5	Special culture techniques: TCBS agar for Vibrio cholera. Pathogens demonstrated microscopically Detection of positive blood cultures: Gram stain for bacteria, Salmonella and Brucella	
6	Detection of positive blood cultures: Gram stain for bacteria, Salmonella and Brucella	2
7	Laboratory diagnosis meningitis, bacterial microscopic examination and culture of *Neisseria meningitides, H. influenzae,*	2
8	*Branhamella catarrhalis,* and *Corynebacterium diphtheriae*	2
9	Ziehl-Neelsen or auramine stains for acid-fast rods, *Mycobacteria spp*.	2
10	Culture. Types of media. Blood agar, MacConkey agar, CLED agar. Important pathogens not isolated by above	2

	techniques as Mycobacteria (Lowenstein Jensen or Middlebrook agar), Leptospira (serology)	
11	Syphilis. Gonorrhoea. Chlamydia infection. Other causes of inguinal Lymphadenopathy. Mycoplasma-other causes of non-gonococcal urethritis. Other causes of vaginitis and urethritis	2
12	Specimen collection and transport Stool specimens for bacteriological culture, E. coli and other enterobacteriaceae.	2
13	Gram stain, culture of *Pseudomonas spp.*	2
14	Pus: rather than a swab dipped in the exudates. *Listeria, Pasteurella spp., Yersinia spp.,* anaerobes	2
15	First term examination	

47. Course evaluation

weekly examination
reports
Homeworks

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	***References*** 1- Jawetz Melnick&Adelbergs Medical Microbiology 26edition June 8, 2014
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

286. Course Name:
Clinical immunology
287. Course Code:
288. Semester / Year:
Spring semester
289. Description Preparation Date:
July 2025
290. Available Attendance Forms: official full attendance

291. Number of Credit Hours (Total) / Number of Units (Total)
30hours
292. Course administrator's name (mention all, if more than one name)
Dr. Mohammed,Mohammed Dr. Salem abdullah, may
293. Course Objectives
A course in clinical immunology aims to equip students with the knowledge and skills to unde diagnose, and manage diseases related to the immune system. This includes gaining expe immunopathology, immunodeficiencies, autoimmunity, allergies, and infections, as well as le arnin techniques for immune correction and prophylaxis. The course also focuses on developing pra tical using immunological parameters for diagnosis and understanding the principles of clinical enet genetic counseling.
294. Teaching and Learning Strategies
Effective teaching and learning strategies for clinical immunology involve integrating various approaches to cater to different learning styles and promote deeper understanding of the comp ex subject matter. These strategies include case-based learning, interactive simulations, laborato y experiences, and incorporating real-world clinical scenarios
295. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluat on method
1	2	Required learning outcomes for clinical immunology include gaining a strong understanding of the immune system's role in health and disease, including its components, mechanisms, and how it interacts with pathogens and other foreign substances. Students should be able to recognize, interpret, and analyze clinical and laboratory signs of immunological disorders, including primary and secondary immunodeficiencies. They should also be able to diagnose these disorders, recommend appropriate treatments, and	Rheumatoid arthritis	Clinical immunology learning methods involve a mix of traditional and active learning techniques to cater to diverse learning styles and promote deeper understanding. These methods include lectures, tutorials, case studies, simulations, and team-based learning, with a focus on both basic immunobiology and clinically relevant material	n teach g clinical immunc logy, evaluati n method sho encomp ass b formati e an summa ve assessm ents with a f cus assessi g bo declara ve knowle ge a practica skills. C omm method include multi choice questio s, objecti e structu ed clinical examina tions (OSCE), an direct

		understand the principles of immunotherapy			observation clinical skills. Feedba both from instructors ar peers, i cruc for guiding learners progress and professional develop ment
2	2	Required learning outcomes for clinical immunology include gaining a strong understanding of the immune system's role in health and disease, including its components, mechanisms, and how it interacts with pathogens and other foreign substances. Students should be able to recognize, interpret, and analyze clinical and laboratory signs of immunological disorders, including primary and secondary immunodeficiencies. They should also be able to diagnose these disorders, recommend appropriate treatments, and understand the principles of immunotherapy	Systemic lupus erythematosus	As above	As above
3	2	Required learning outcomes for clinical immunology include gaining a strong understanding of the immune system's role in health and disease, including its components, mechanisms, and how it interacts with pathogens and other foreign substances. Students should be able to recognize, interpret, and	Ankylosing spodylitids	As above	As above

		analyze clinical and laboratory signs of immunological disorders, including primary and secondary immunodeficiencies. They should also be able to diagnose these disorders, recommend appropriate treatments, and understand the principles of immunotherapy			
4	2	As above	Sjogren syndrome	As above	As above
5	2	As above	Gluten sensitive enteropathy Type 2 diabetes Miletus	As above	As above
6	2	As above	Inflammatory bowel diseases	As above	As above
7	2	As above	Autoimmune hepatitis	As above	As above
8	2	As above	Immune mediated renal diseases	As above	As above
9	2	As above	Asthma	As above	As above
10	2	As above	Hypersensitivity Diseases	As above	As above
11	2	As above	Autoimmune hemolytic diseases	As above	As above
12	2	As above	Eczema and contact dermititis	As above	As above
13	2	As above	**Endocrinology (Immunological Thyroid Diseases**	As above	As above
14	2	As above	**Tumors and Tumor Markers**	As above	As above
15	2	As above	Revision	As above	As above

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours

1	Rheumatoid Arthritis: RF Test & Anti-CCP Test	2
2	Systemic Lupus Erythematosus: ANA & ds-DNA	2
3 4	Sjögren's Syndrome: Shimmer's Test & Sialometery Ankylosing Spondylitis: HLA-B 27 Typing; Schober's Test	2
5	Bechet's Disease: Pathergy Test & HLA-B51 typing	2
6	Liver & Gastrointestinal Diseases .1Gluten sensitive Enteropathy: sIgA Anti-Gliadin Ab, Anti-Endomesial Ab & Anti-tTG Ab Test	2
7	Type A Gastritis (Pernicious Anemia): Schilling Test	2
8	Type B Gastritis (Mucosa-associated lymphoid tissue lymphoma) and Helicobacter pylori associated chronic gastritis: Breathe Test	2
9	Ulcerative Colitis: ANCA Ab Test	2
10	Crohn's Disease: ASCA Ab Test	2
12	LIVER & GALL BLADDER DISORDERS: .1Autoimmune Chronic Active hepatitis (AIH): Anti-Smooth Muscle2 Test, Anti-Liver/ Kidney Microsome Test & Anti-Soluble Liver	2
13	INFLAMMATORY BOWEL DISEASES: Primary Biliary Cirrhosis: Anti-Mitochondrial Ab Primary Sclerosing Cholangitis: p-ANCA	2
14	Renal Diseases A. Circulating immune complexes	2
15	Lupus Nephritis: Anti-ds-DNA, C3 Estimation & General urine analysis Post infection Glomerulonephritis: ASO Test, Anti-DNAse, AntiHase	2

49. Course evaluation

weekly examination
reports
Homeworks

50. Learning and Teaching Resources

Required textbooks (curricular books, if any) . *Stites DP, Terr AI, Parslow TG (2011) Medical Immunology; 7 th Ed. Middle East Edition; By Appleton & Lange 2. Goldspy RA, Kindit TJ, Osborne BA. & Kuby J. (2008) Kuby Immunology 6th Ed. 3. Abul K. Abbas; Andrew H. Lichtman (2011). Cellular & Molecular Immunology. 5th Ed. By SAUNDERS 4. Reiner Westermeier. (2008). Electrophoresis in Practice 4th Ed. 5. Zabriskie JB. (2009). Essential Clinical Immunology. Cambridge 6. Christine Dorresteyn Stevens (2010). Clinical Immunology & Serology, 3rd Ed. By F.A. Davis Company 7- Detrick , Schmitz and Hamilton- Manual of molecular and clinical laboratory immunology	
Main references (sources) . *Stites DP, Terr AI, Parslow TG (2011) Medical Immunology; 7 th Ed. Middle East Edition; By Appleton & Lange 2. Goldspy RA, Kindit TJ, Osborne BA. & Kuby J. (2008) Kuby Immunology 6th Ed. 3. Abul K. Abbas; Andrew H. Lichtman (2011). Cellular & Molecular Immunology. 5th Ed. By SAUNDERS 4. Reiner Westermeier. (2008). Electrophoresis in Practice 4th Ed. 5. Zabriskie JB. (2009). Essential Clinical Immunology. Cambridge 6. Christine Dorresteyn Stevens (2010). Clinical Immunology & Serology, 3rd Ed. By F.A. Davis Company 7- Detrick , Schmitz and Hamilton- Manual of molecular and clinical laboratory immunology	
Recommended books and references (scientific journals, reports...) Journal of Immunology Journal of immunological Methods	
Electronic References, Websites Google scholar WHO site	

Course Description Form

296. Course Name:
Antibiotics
297. Course Code:
MEL445

298. Semester / Year:
Autumn/ 2025-2026
299. Description Preparation Date:
19/ 7/ 2025
300. Available Attendance Forms: official full attendance
Attend lectures in person
301. Number of Credit Hours (Total) / Number of Units (Total)
30 Hours
302. Course administrator's name (mention all, if more than one name)
Assistant Lecturer MAY SALEM ABDULLAH
303. Course Objectives

1.Understanding Antibiotics concerning the following:

-The importance of antibiotics.

- The different groups of antibiotics.

- The characters of each antibiotic.

- The chemical structure of each antibiotic.

- Comparison between the different groups of antibiotics.

- The mechanism of Action of different classes of antibiotics.

- Learning how different classes of antibiotics target bacterial cells to inhibit growth or kill bacteria.

-Spectrum of Activity:

Understanding which bacteria a particular antibiotic is effective against (broad-spectrum vs. narrow-spectrum).

-Pharmacokinetics and Pharmacodynamics:

Comprehending how antibiotics are absorbed, distributed, metabolized, and eliminated by the body, and how thes factors affect their effectiveness.

-Recognizing that antibiotics are only effective against bacterial infections and not viral infections like colds or th flu.

-Understanding mechanisms of bacterial resistance to antibiotics and how bacteria become resistant to antibiotic (e.g., mutations, gene transfer).

-Recognizing factors that contribute to the development of antibiotic resistance, such as overuse, misuse, and inadequate infection control measures.

2. Strategies for Prevention:

Learning about strategies to minimize the development and spread of antibiotic resistance, including promoting responsible antibiotic use, improving infection control practices, and developing new antibiotics.

3. Antimicrobial Stewardship:

-Understanding the concept of antimicrobial stewardship and its role in optimizing antibiotic use to improve patie outcomes and protect public health.

-Implementation:

Learning how to implement antimicrobial stewardship programs in different healthcare settings.

Monitoring and Evaluation:

Understanding how to monitor and evaluate the effectiveness of antimicrobial stewardship interventions.

4. Public Health Implications:

-Recognizing antibiotic resistance (AMR) as a global public health threat requiring coordinated action.

-One Health Approach including understanding the interconnectedness of human, animal, and environmental hea in the context of AMR.

5. Carry on and encourage research on antibiotics.

304. Teaching and Learning Strategies

-Lectures.

- Performing laboratory experiments.

- Reference books, reports and journals.

- Discussions.

- Data show.

-Seminars.

- Quizzes and Examinations.

305. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Definition, History, and Importance of Antibiotics. Classification of Antibiotics According to Chemical Structure and Mode of Action	Introduction To Antibiotics	Lecture	Quizzes, Exams, Seminars, Discussions
2	2	Describing the Mechanisms of Action of Antibiotics on the Bacterial Cell in Comparison to the Mechanisms of Action of other Types of Antimicrobial Agents.	Mechanisms of Antimicrobial Action And Antimicrobial Resistance	Lecture	Quizzes, Exams, Seminars, Discussions

3	**2**	**Defining the Beta Lactams (e.g. Penicillin) according to Structure and Other Properties and Mechanism of Action**	**Beta lactam Penicillins**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
4	**2**	**Defining the Properties, Structure, and Mechanism of Action of Cephalosporins**	**Cephalosporins**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
5	**2**	**Defining the Properties, Structure, and Mechanism of Action of Cephalosporins**	**Carbapenems**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
6	**2**	**Defining the Properties, Structure, and Mechanism of Action of Monobactams**	**Monobactams**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
7	**2**			**EXAM**	**Quizzes, Exams, Seminars, Discussions**
8	**2**	**Defining the Properties, Structure, and Mechanism of Action of Macrolides**	**Macrolides**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
9	**2**	**Defining the Properties, Structure, and Mechanism of Action of Quinolones**	**Quinolones**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
10	**2**	**Defining the Properties, Structure, and Mechanism of Action of Tetracyclines**	**Tetracyclines**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
11	**2**	**Defining the Properties, Structure, and**	**Aminoglycosides**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**

		Mechanism of Action of Aminoglycosides			
12	**2**	**Defining the Properties, Structure, and Mechanism of Action of Lincomycin**	**Lincomycin**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
13	**2**	**Defining the Properties, Structure, and Mechanism of Action of Glycopeptides**	**Glycopeptides**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
14	**2**	**Explaining the Non-traditional Methods to Treat Bacterial Infections in comparison with antiviral and antifungal drugs**	**Non-traditional Methods to Treat Bacterial Infections/ comparison with antiviral and antifungal drugs**	**Lecture**	**Quizzes, Exams, Seminars, Discussions**
15	**2**			**EXAM**	**Quizzes, Exams, Seminars, Discussions**

51. Course evaluation:

-Weekly and Monthly Examinations
-Reports
-Home works
-Seminars
-Discussions

52. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**----------**
Main references (sources)	**-Antibiotics: Challenges, Mechanism Opportunities by Christopher Walsh and Timothy Wencewicz** **-Introduction to Antibiotics By Gulick, Patrick J** **-ANTIVIRAL DRUGS From Basic Discovery Through Clinical Trials, Edited by Wieslaw Kazmierski**

	-Antifungal Therapy, Second Edition Edited By Mahmoud A. Ghannoum, John R. Perfect Copyright 2019, Second Edition
Recommended books and references (scientific journals, reports...)	**-The Journal of Antibiotics.** **-Antibiotics.**
Electronic References, Websites	**https://ar.wikipedia.org**

Course Description Form

306. Course Name:
Advance clinical Biochemistry
307. Course Code:
308. Semester / Year:
Semester
309. Description Preparation Date:
310. Available Attendance Forms: official full attendance
311. Number of Credit Hours (Total) / Number of Units (Total)
30/30 hours theory and practical
312. Course administrator's name (mention all, if more than one name)
Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq
313. Course Objectives
1. Laboratory Safety Competency 2. **Specimen Management Excellence** 3. **Quality Management Systems** 4. **Advanced Analytical Techniques** 5. **Laboratory Information Systems** 6. **Clinical Laboratory Operations**
314. Teaching and Learning Strategies
1- Lectures **2- Conducting practical experiments** **3- Reading textbooks** **4- Conducting scientific discussions**

5- Conducting practical experiments in the laboratory

6- Reading textbooks

7- Using (Data show)

315. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	• Safety awareness of persons and safety equipment • Personal protective equipment (PPE) requirements • Laboratory safety protocols and procedures	**Safety Awareness and Personal Protection**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
2	2	• Chemical hazards identification and classification • Safe handling and storage of chemicals • Material Safety Data Sheets (MSDS)	**Chemical Safety**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
3	2	• Biological hazards and biosafety levels • Infection control measures • Safe handling of biological specimens	**Biological Safety**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
4	2	• Fire safety and control of other hazards • Emergency procedures and evacuation protocols	**Fire Safety and Hazard Control**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

		• Safety equipment maintenance			
5	2	• Disposal of hazardous materials • Waste segregation and classification • Environmental safety compliance	**Waste Management**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
6	2	• Requesting lab results procedures • Electronic and manual request systems • Communication with clinical teams	**Laboratory Request Systems**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
7	2	• Classification of request cards in laboratory • Interpretation of selective tests and screening tests • Result reporting and clinical significance	**Test Classification and Interpretation**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
8	2	• Specimen collection (urine, blood, feces, cerebrospinal fluid, and other body fluids) • Specimen handling (maintenance of identification, preservation, separation, storage, and transport) • Pre-analytical variables affecting specimen quality	**Comprehensive Specimen Management**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

9	2	• Antigen detection methods • Molecular detection techniques • Cell culture applications • Serology (antibody detection) procedures	**Laboratory Detection Techniques**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
10	2	• Fundamentals of total quality management • Quality assurance principles • Laboratory accreditation standards	**Total Quality Management Fundamentals**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
11	2	• The total testing process overview • Control of preanalytical variables • Workflow optimization	**Testing Process Control**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
12	2	• Control of analytical variables • Internal quality control procedures • External quality assessment programs	**Analytical Quality Control**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
13	2	• High-performance liquid chromatography (HPLC) • Gas chromatography-	**Advanced Clinical Chemistry Techniques**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

		mass spectrometry (GC-MS) • Electrophoresis techniques			
14	2	• Immunoassay technologies • Automated analyzer systems Point-of-care testing devices	**Advanced Clinical Chemistry Techniques II**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
15	2	• Laboratory Information Management Systems (LIMS) • Electronic health records integration • Data management and security	**Laboratory Information Systems**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
1	**Laboratory Safety Protocols**	**2**
2	**Laboratory Equipment and Instrumentation**	**2**
3	**Laboratory Measurements and Standards**	**2**
4	**Laboratory Water Systems and Reagents**	**2**
5	**Specimen Collection and Processing**	**2**
6	**Spectroscopic Methods**	**2**
7	**Chromatographic Techniques**	**2**
8	**Electrophoretic Techniques**	**2**
9	**Immunoassay Technologies**	**2**
10	**Molecular Diagnostic Techniques**	**2**
11	**Laboratory Quality Control**	**2**
12	**Method Validation and Verification**	**2**
13	**Proficiency Testing and External Quality Assessment**	**2**
14	**Laboratory Accreditation Standards**	**2**
15	**Laboratory Statistics and Data Analysis**	**2**

53. Course evaluation weekly examination reports Homeworks

54. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• **D.M. Vasudevan Biochemistry for Medical Stude Tenth Edition**
Main references (sources)	• **Tietz Textbook of Clinical Chemistry** • **Clinical Chemistry: Techniques, Principles, Correlations** **Harper's Illustrated Biochemistry**
Recommended books and references (scientific journals, reports…)	• *New England Journal of Medicine (NEJM)*: *The Lancet Diabetes & Endocrinology*:
Electronic References, Websites	• www.uptodate.com https://www.medscape.com/

Course Description Form

316. Course Name:
Advance clinical biochemistry
317. Course Code:
318. Semester / Year:
Semester
319. Description Preparation Date:
320. Available Attendance Forms: official full attendance
321. Number of Credit Hours (Total) / Number of Units (Total)
30/30 hours theory and practical
322. Course administrator's name (mention all, if more than one name)
Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq
323. Course Objectives
1. Digital Laboratory Systems Proficiency **2. Clinical Decision Support Systems** **3. Pediatric Laboratory Specialization** **4. Comprehensive Function Testing** **5. Clinical Case Analysis Skills** **6. Integrated Multi-System Assessment**
324. Teaching and Learning Strategies

1- Lectures

2- Conducting practical experiments

3- Reading textbooks

4- Conducting scientific discussions

5- Conducting practical experiments in the laboratory

6- Reading textbooks

7- Using (Data show)

325. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Automated result processing and validation Statistical analysis software Quality control data management	**Automated Data Processing**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
2	2	Barcode systems and specimen tracking Digital imaging and documentation Remote monitoring capabilities	**Digital Laboratory Technologies**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
3	2	Computer-aided diagnosis tools Reference range management Alert systems and critical values	**Clinical Decision Support Systems**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
4	2	Special considerations for pediatric patients Minimum sample volumes and collection techniques Age-appropriate reference ranges	**Pediatric Specimen Collection**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
5	2	Newborn screening programs	**Pediatric Metabolic Disorders**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

		Inherited metabolic diseases Growth and development markers			
6	2	Age-specific normal values Developmental changes in laboratory parameters Pediatric emergency laboratory protocols	**Pediatric Laboratory Interpretation**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
7	2	Functional tests in clinical chemistry Profile test investigations Organ-specific test panels Disease-specific biomarker profiles	**Comprehensive Function Testing**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
8	2	Specimen collection (urine, blood, feces, cerebrospinal fluid, and other body fluids) Specimen handling (maintenance of identification, preservation, separation, storage, and transport) Pre-analytical variables affecting specimen quality	**Comprehensive Specimen Management**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
9	2	Problems in biochemistry calculations Unit conversions and standardization Statistical analysis of laboratory data Quality control calculations	**Problem-Solving in Biochemistry**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
10	2	Cardiac biomarker interpretation	**Cardiovascular Disease Cases**	Personal educational lectures	• Short examinations • Midterm

		Lipid profile case studies Risk assessment calculations		using Data Show (PowerPoint) program	examination • Final examination
11	2	Glucose metabolism disorders HbA1c monitoring cases Diabetic complications assessment	**Diabetes Management Cases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
12	2	Hepatic enzyme pattern interpretation Bilirubin metabolism disorders Liver disease progression monitoring	**Liver Function Cases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
13	2	Renal function assessment Electrolyte imbalance cases Chronic kidney disease monitoring	**Kidney Function Cases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
14	2	Thyroid function testing Adrenal function assessment Reproductive hormone evaluation	**Endocrine Disorder Cases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
15	2	Complex multi-system disorders Comprehensive metabolic panels Longitudinal patient monitoring Interdisciplinary case discussions	**Integrated Clinical Chemistry Cases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

Course description (practical)		
weeks	**Laboratory sessions &** ***Clinical requirements***	hours

1	**Laboratory Information Management Systems (LIMS)**	2
2	**Laboratory Automation**	2
3	**Digital Laboratory Technologies**	2
4	**Data Analytics and Reporting**	2
5	**Laboratory Compliance and Documentation**	2
6	**Therapeutic Drug Monitoring**	2
7	**Toxicology Laboratory Methods**	2
8	**Emergency Laboratory Protocols**	2
9	**Laboratory Troubleshooting**	2
10	**Laboratory Calculations and Problem-Solving**	2
11	**Laboratory Workflow Optimization**	2
12	**Laboratory Safety Management**	2
13	**Laboratory Cost Management**	2
14	**Laboratory Leadership and Communication**	2
15	**Pediatric Laboratory Testing**	2

55. Course evaluation

weekly examination
reports
Homeworks

56. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• **D.M. Vasudevan Biochemistry for Med Students, Tenth Edition**
Main references (sources)	• **Tietz Textbook of Clinical Chemistry** • **Clinical Chemistry: Techniques, Principles, Correlations** **Harper's Illustrat Biochemistry**
Recommended books and references (scientific journals, reports…)	• *New England Journal of Medicine (NEJM)*: *The Lancet Diabetes Endocrinology*:
Electronic References, Websites	• www.uptodate.com https://www.medscape.com/