وزارة التعليم العالي والبحث العلمي

جامعة كلكامش
GILGAMESH UNIVERSITY

Academic Program Description Form

University Name: Gilgamesh University

Faculty/Institute: Medical and Health Techniques

Academic or Professional Program Name:

Final Certificate Name: Bachelor in Medical and Health Techniques

Academic System: Credit-hour system

File Completion Date:

Signature:
Head of Department Name:
Date:

Signature:
Scientific Associate Name: May Salem Abdullah
Date: 30th / June / 2026

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Date:

الأستاذ الدكتور
علي عبدالله التميمي
عميد كلية التقنيات الصحية والطبية

جامعة كلكامش
قسم ضمان الجودة وأداء الجامعي

1. Program Vision

To be a leading department in medical laboratory education by preparing qualified professionals capable of keeping pace with scientific advancements in accordance with quality and accreditation standards.

2. Program Mission

To provide advanced academic programs that integrate theory and practice, preparing competent graduates with scientific knowledge, technical skills, and professional ethics to meet labor market needs and improve healthcare services.

3. Program Objectives

- Prepare specialized professionals in medical laboratory sciences
- Develop modern curricula aligned with scientific advancements
- Strengthen practical training
- Support applied research
- Promote professional ethics
- Build academic partnerships
- Prepare graduates for medical challenges and epidemics
- Encourage lifelong learning

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
1st level		English Language	Basic	*	*	*	*	*	*	*	*	*	*	*	*
		Computer	Basic	*	*	*	*	*	*	*	*	*	*	*	*
1st level		Medical terminology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
		General chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
1st level		General biology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
		Democracy and Human rights	Basic	*	*	*	*	*	*	*	*	*	*	*	*

1st level		General Histology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
		Human physiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level			Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level		Lab. Instrumentation	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level		Arabic Language	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level		Sports	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level		Biochemistry basics	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level		General anatomy	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
1st level		Human biology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*

1st level		Systematic Histology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Computer	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Arabic Language	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Professional ethics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Biostatistics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Medical Bacteriology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Metabolic disorders	Basic	*	*	*	*	*	*	*	*	*	*	*	*
2st level		Medical Protozoa	Basic	*	*	*	*	*	*	*	*	*	*	*	*

2st level		Genetic engineering or Stem cell	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		Laboratory Safety	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		Histopathology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		Hematology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		laboratory techniques	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		Medical Mycology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		Endocrinology & Clinical Enzymology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3st level		Research methods	Basic	*	*	*	*	*	*	*	*	*	*	*	*

3st level		**Clinical Biochemistry**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
3st level		**Medical Virology**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
3st level		**Medical Genetics**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
3st level		**Medical entomology or opportunistic parasites**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
4st level		**Preventive and social medicine or Serology and Vaccines**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
4st level		**Diagnostic Protozoology**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
4st level		**Biochemical Diagnostic Techniques**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
4st level		**Antibiotics**	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*

4st level		Nanotechnology or pharmacologic	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Blood transfusion	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Scientific research methodology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Diagnostic Bacteriology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Clinical Immunology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Diagnostic Helminthology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Advanced Clinical chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4st level		Graduation Project	Basic	*	*	*	*	*	*	*	*	*	*	*	*

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

Course Description Form

Course Name:
Human Anatomy
Course Code:
MLT1229
Semester / Year:
2024_2025
Description Preparation Date:
29-Jul-202٦
Available Attendance Forms:
Weekly
Number of Credit Hours (Total) / Number of Units (Total)
Course administrator's name (mention all, if more than one name)
Name: Dr. Dhifaf Mohsin Email: dhifafmohsin@gmail.com
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.

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 mean 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

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

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 edition. Elsev 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

Course Name:
Human Physiology
Course Code:
MLT1226
Semester / Year:
2024_2025
Description Preparation Date:
29-Jul-2026
Available Attendance Forms:
Weekly
Number of Credit Hours (Total) / Number of Units (Total)
4hous /week Unit 6
Course administrator's name (mention all, if more than one name)
Name: dhifaf mohsin Email: dhifafmohsin@gau.edu.iq
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.

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
1
Introduction to Human Physiology and Levels of Organization
2
Cell Physiology: Cell Membrane and Membrane Transport
3
Homeostasis and Feedback Mechanisms
4
Body Fluids and Electrolyte Balance
Part II: Body Systems
5
Nervous System: Neurons, Action Potentials, Synapses
6
Central Nervous System: Brain and Spinal Cord
7
Peripheral Nervous System and Cranial Nerves
8
Autonomic Nervous System
9
Muscular System: Muscle Types and Contraction Mechanism
10
Skeletal System: Bone Physiology and Calcium Regulation
11
Cardiovascular System: Heart and Circulation

12Cardiovascular System: Blood Pressure Regulation, Blood Components
13
Respiratory System: Mechanics of Breathing and Gas Exchange
14
Respiratory System: Gas Transport and Regulation of Respiration
15
Renal System: Kidney Functions and Urine Formation
16
Renal System: Acid-Base Balance
17
Digestive System: Digestion and Absorption in the Upper GI Tract
18
Digestive System: Digestion and Absorption in the Lower GI Tract and Accessory Glands
19
Endocrine System: Introduction and Major Hormones (Pituitary, Thyroid)
20
Endocrine System: Adrenal Glands, Pancreas, and Gonads
21
Immune System: Introduction and Types of Immunity
22
Physiology of the Skin
23
Physiology of Special Senses (Vision, Hearing, Smell, Taste, Touch)
24
Reproductive Physiology

25

Physiology of Pregnancy and Childbirth (Introduction)

26

Physiology of Aging and Development

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.

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

Course Name:
Bio chemistry
Course Code:
HMTCK112
Semester / Year:
Semester2/2025−2026
Description Preparation Date:
1/4/2026
Available Attendance Forms:
Theory/practical /weekly
Number of Credit Hours (Total) / Number of Units (Total)
Experimental 3/Theoretical 2
Course administrator's name (mention all, if more than one name)
Name: prof. Dr. Ali abdulla Email:
Course Objectives
Understanding the vital activities taking place in the human body **• Knowing and diagnosing some diseases** **• Knowledge of the functioning of vital systems within the body** **• Knowing the normal ratios for each biological analysis**
Teaching and Learning Strategies
Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	**Water Homeostasis** **Electrolytes**	**Water Homeostasis** **Electrolytes**	in person educa lectures using show (PowerPo software.	• Shortc uizzes • Term exam • Final exam

2	2	**proteins** **Minerals**	**proteins** **Minerals**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
3	2	**Diabetes mellitus**	**Diabetes mellitus**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
4	2	**Other types of DM** **LADA**	**Other types of DM** **LADA**	in person educa lectures using show (PowerPo software.	• Shortc uizzes • Term exam • Final exam
5	2	**tests are used for diagnosis of diabetes**	**tests are used for diagnosis of diabetes**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
6	2	**. ◦ hemoglobin A1c (HbA1c) test**	**. ◦ hemoglobin A1c (HbA1c) test**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
7	2	**Enzymes**	**Enzymes**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
8	2	**PLASMA ENZYMES:**	**PLASMA ENZYMES:**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
9	2	**LACTATE DEHYDROGENASE (LDH) (LD)**	**LACTATE DEHYDROGENASE (LDH) (LD)**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
10	2	**Liver Function Tests**	**Liver Function Tests**	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam
11		**Albumin** **Bilirubin metabolism**	**Albumin** **Bilirubin metabolism**		
12	2	Final Examination	Final Examination	in person educa lectures using show (PowerPo software.	• Short cuizzes • Term exam • Final exam

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.

Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Lippincott's Illustrated Reviews: Biochemistr Fifth Ed. and Biochemistry Map (Medmaps) Bun Richard Harvey and Denise. Lippincott Williams Wilkins, 2010 . 2- David L. Nelson; Michael M. Cox . (2017) .Lehninger .Principles of Biochemistry. Sevent Edition| ©2017 New Edition Available . 3- John Wiley & Sons Ltd (2018). Peter Rae. Clinical Biochemistry Lecture

Main references (sources)	. 1. - Vadakedath S and Kandi V."Dialysis: A Review of the Mechanisms Underlying Complications in the Management of Chronic Re Failure".Cureus. 2017 Aug 23;9(8). 2-Valdete Topçiu-Shufta and Valdete Haxhibeqiri."Lipid Disorders in Uremia". Chapt 54 .ONLINE FIRST. Published: November 11 2019. 3- Clinical Chemistry , Fifth edition , Michael Bishop , Ms , CLS , MT (ASCP) , Lipincott Williams & wilkins . A wolters kluwer company 2005) . 4-Jacobs D.S etal , Laboratory text hand book , edition , Lexicomp Inc . (1994) . 5-Brown B.I ; Brown D.H in Carbohyd metabolism and Its disor.
Recommended books and references (scientific journals, reports…)	Internet
Electronic References, Websites	Websites of magazines classified within Scopus, internati publishing houses, and international universities

The structure of the course is the practical aspect		
	Laboratory sessions & *Clinical requirements*	الساعات
١	Lab saftety	2
٢	Use a mercury blood pressure device	2
٣	Method of drawing blood	2
٤	Blood type diagnosis	2
٥	Kidney function test/ determination serum urea	2
٦	/ determination serum ceratinine	2
٧	/ determination serum uric acic	2
٨	General review and exam	2

Course Description Form

Course name
General chemistry
Course code

HMT 126
semester/ year
one semester, with an average of 15 lectures.
Date this description was prepared
٢٠٢٦/2/28
Available attendance forms
My presence only
Number of study hours (total) / Number of units (total)
Number of units=3
Name of the course administrator (if more than one name is mentioned)
Name: Mayada Hamid Mahdi Hotmail.co.uk@mayada74
objectives Course
understand the fundamental principles of atomic structure and chemical bonding. **Explain periodic trends using the Periodic Table.** **Perform stoichiometric calculations and balance chemical equations.** **Apply gas laws and explain states of matter.** **Calculate solution concentrations (molarity, molality, normality).** **Analyze acids and bases, calculate pH, and interpret titration results.** **Apply thermochemistry principles to chemical reactions.** **Develop safe laboratory skills and accurate experimental techniques.**
Teaching and learning strategies
Teaching Strategies Interactive Lectures Concept-focused lectures with real-life applications (health, environment, industry). Problem-Based Learning (PBL) Solving numerical problems (stoichiometry, gas laws, pH). Think–Pair–Share Activities Short conceptual questions during class. Multimedia Demonstrations Animations to explain atomic structure, bonding, and reaction mechanisms. Flipped Classroom (Selected Topics) Students review videos before class; in-class time for problem solving.
Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week

Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Introduction to analyt chemistry (matter , structur atom , periodic table , bonc	Describe properties c solids, liqui and gases. Apply gas laws (Boyle Law, Charles's Law, Ideal Gas Law). plain phase anges and phase diagrams.	2	1
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Methods of analysis Solution (preparation standard solution u concentration , percentag formal. Sol.	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	2
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Molar solution , Norma solution	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	3
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Statistical treatment analytical data (accurac Mean value , deviatio standard deviation mea value systematic errors relative error , random absolute error	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law).	2	4

			Explain pha changes and pha diagrams.		
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Chemical reaction equilibrium constant , reac rate , catalyst solubilit ionization	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	5
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Neutralization (acid base theory , PH , Buffers end point) Oxidation reduction Equili	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	6
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Precipitation methods (gravimetry) formation of , type of ppt. agent titrati calculations	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	7
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Spectroscopy (Optical spectroscopy , Be law)	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	8

Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Structure of carbon compounds (alkanes , alke , alkynes , halogen compou	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	9
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Alcohols , classificatio properties reaction	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	10
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Aldehydes and ketones properties reaction	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	11
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Aldehydes and ketones properties reaction	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	12
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Carboxyl acid , amines Aromatic , Hydrocarbo	Describe properti of solids, liquids, and gases.	2	13

			Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.		
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Carboxyl acid , amines Aromatic , Hydrocarbor	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	14
Monthly and quarterly exams a quizzes	Integrated in-perso lecture	Nitro compound , sulphoni acids , Phennols , aromatic carboxyl acid , polynuclear hydrocarbon	Describe properti of solids, liquids, and gases. Apply gas laws (Boyle's Law, Charles's Law, Ide Gas Law). Explain pha changes and pha diagrams.	2	15

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١	Laboratory instruction , safety rule , equipments	٤
٢	Identification of some common inorganic cation	٤
3	Identification of some common inorganic anions	
٤	Practic. With balances (preparation of different types of solutions.Percentage sol (w/v % , v/v % , w/w %) ppm	٤
٥	Normal solution , molar solution , dilution	٤
٦	Buffer solutions preparation and PH determination	٤
٧	Neutralization reaction (standardization of NaOH against standard HCL Determination of acetic acid in vinegar Determination of a mixture of carbonate , bicarbonate	٤
٨	Redox titration Titration of KMNO4 solution against oxalic acid	٤

	٩	Precipitation reaction , determination of halides Cl-ion	٤
	١٠	Separation and purification of organic compound Distillation , extraction crystallization , sublimation	٤
	١١	Determination of melting point Determination of boiling point	٤
	١٢	Reaction of some organic compounds (Aliphatic , aromatic alcohols phenols , aldehyde and ketone)	٤
	١٣	Aliphatic and aromatic carboxylic acid	٤
	١٤	Scheme for identification	٤
	١٥	Scheme for identification of solid organic compound	٤

Course Evaluation

1. **Course evaluation**
   weekly examination
   reports

Homeworks

Learning and teaching resources	
References 1-Chemistry for the health sciences , sakheim and lehman 5th ed.1981 2-General ,organic a biochemistry,Karene.Timber 2007	

Course description form

Course Name
human rights
CodeThe decision
LAW121(human rights)
the chapter /the year 2025\2026
The first stage
Date this was preparedthe description
22/9/2025
aAttendance forms available
My presence
Number of study hours (total)/number of units (total)
(Two hours) Weekly
Name of the course administrator(If more than one name is mentioned)
Name: Humam Ali Sabeeh Emali: Humam.a.sabeeh@gu.edu.iq
Course objectives

➢ Disseminate the concept of human rights and a statementSpeciesRights, freedoms, and intellectual contribution to the development of this idea. ➢ Statement of the position of international agreements and Iraqi and Arab constitutions on these rights. ➢ Educating on legal, judicial and political means of protecting human rights.	**Objectives the stu subject**
Teaching and learning strategies	
- Attendance lectures (lecturerfigWeekly) and interactive lectures Electronic(Google meet) As needed. - Using modern educational methods and techniques and (Powerpoint)	**The strateg**

The first stage/Chapter one
human rights

Course structure					
Evaluation method	**Learning method**	**Name of the unit or topic/**	**Required learning outcomes**	**hours**	**the week**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	**The concept of right, humanity and human rights**	**Know and understand**	**1**	**the first**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	The historical development of the idea of human rights in antiquity and the Middle Ages	**Know and understand**	**1**	**the second**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	The historical development of the idea of human rights in the Renaissance and the beginning of the modern era	**Know and understand**	**1**	**the third**
Oral exam, student participation, interaction	**Theoretical lecture**	The historical development of the idea of human rights in	**Know and understand**	**1**	**the fourth**

and attendance		divine laws/Islamic law			
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Intellectual contribution to the development of the idea of human rights / ancient and medieval times	**Know and understand**	**1**	**Fifth**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Intellectual contribution to the development of the idea of human rights / in the Renaissance and the early modern era	**Know and understand**	**1**	**VI**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Types of rights and freedoms/traditional freedoms	**Know and understand**	**1**	**Seventh**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Economic freedoms	**Know and understand**	**1**	**VIII**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Social freedoms	**Know and understand**	**1**	**Ninth**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Human rights in declarations of rights and regional documents/national and universal declarations of rights	**Know and understand**	**1**	**The tenth**
Oral exam, student participati	**Theoretical lecture**	Human rights in regional agreements	**Know and understand**	**1**	**eleventh**

on, interaction and attendance					
Written exam	**Theoretical lecture**	Written exam	**Know and understand**	**1**	**twelveth**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Human rights in Iraqi constitutions	**Know and understand**	**1**	**Thirteenth**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Legal and judicial means of protecting human rights	**Know and understand**	**1**	**fourteenth**
Oral exam, student participation, interaction and attendance	**Theoretical lecture**	Political means of protecting human rights	**Know and understand**	**1**	**Fifteenth**

Course evaluation
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc. - A written semester exam of 20 points - Student attendance and participation in class, oral exams, quick exams, and submission of work papers And research of 10 marks - Final exam of 70 points - Total 100 marks

Learning and teaching resources	
	Required textbooks (methodology, if ar
Required textbooks/Human Rights book by Dr. Hamid Hanoun Khaled	Main references (sources)
LooksIslamicIn the Declaration of Human Rights by Muhammad Muhammad Sadiq al-Sadr	Supporting books and references that

Based on the letter of the Ministry of Higher Educat and Scientific Research / Department of Studies, Plann and Follow-up / Department of Studies and Planning, 3/7659 dated 10/19/2023.	Recommended (scientific journals, reports….)
	Electronic references, Internet sites

Course Description Form

Course Name:
General Biology
Course Code:
HMT1127
Semester / Year:
Autumn Semester
Description Preparation Date:
24/ 2 / 2026
Available Attendance Forms: official full attendance
In-person only
Number of Credit Hours (Total) / Number of Units (Total)
٢0 hours / 3 units
Course administrator's name (mention all, if more than one name)
mustafa.faris@gu.edu.iq : Email Mustafa Faris Husain :Name
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.

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)

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 ,Anabolism, Catabolism Respond to stimuli, Reproduction	"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	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

٥	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
٦	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
٧	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
٨	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
٩	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
١٠	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
١١	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
١٢	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
١٣	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Harmful Activity of Bacteria	“Hybrid in-person lecture”	Quizzes, monthly exams, and final semester exams
١٤	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

١٥	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
١	The Microscope	3 hours
٢	The Living World, The Science of Biology, Why study Biology, The importance of Clinical Biology	3 hours
٣ ٤	The Characteristics of Organisms, Evaluation, Adaptation, Respiration, Homeostasis‟, Metabolism, Anabolism, Catabolism, Respond to stimuli, Reproduction	3 hours
٥	Biological Classification, Five kingdom classification; Salient features and classification of Monera, Protista, and Fungi into .major groups: Lichens, Viruses, and Viroids	3 hours
٦	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
٧	Study Cell Structure and Function, Animal cell, Cell membrane, Nucleus	3 hours
٨	Endoplasmic Reticulum, Golgi apparatus, Cilia, Flagella. Plant cell, Comparison between Animal and plant cell	3 hours
٩	Prokaryotes cells, Eukaryotes cells, Differences, Characteristics .and Comparison	3 hours
١٠	Cell Life cycle, (Mitosis), Nuclear Division, Cytoplasmic .Division	3 hours
١٢	Meiosis(Human Reproduction), Spermatogensis, Oogenesis	3 hours
١٣	DNA, RNA structures , Gene and Gene action	3 hours
١٤	Genetic codes, Replication, Translation, Transcription and Mutation	3 hours
١٥	Organ, Digestive, Circulatory, Respiratory, Urinary, Muscularly, .Nervous) Systems	3 hours

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).	
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

Course Name:
Human Biology
Course Code:
MLT12210
Semester / Year:
Spring Semester
Description Preparation Date:
٢٤/ ٢ / 202٦
Available Attendance Forms: official full attendance
In-person only
Number of Credit Hours (Total) / Number of Units (Total)
٢0 hours / 3 units
Course administrator's name (mention all, if more than one name)
mustafa.faris@gu.edu.iq : Email Mustafa Faris Husain :Name
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.

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)

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
٥	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
٦	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
٧	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
٨	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
٩	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
١٠	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
١١	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
١٢	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Helminthes, Characteristics and Classification	“Hybrid in-person lecture”	Quizzes, monthly exams, and final semester exams
١٣	2Hours	Providing students with the ability to apply theoretical knowledge in	Flat Worms, Round Worms ,Classification, Harm full Activities to Human	“Hybrid in-person lecture”	Quizzes, monthly exams, and final semester exams

		practical and research contexts			
١٤	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
١٥	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
١	Kingdom of Monera: Phylum Schizophyta (Bacteria),	3 hours
٢	Classification, Structure, Morphology, Growth and Function, Motility	3 hours
٣ ٤	Harmful activity of Bacteria, Bacterial Diseases in Human and animals, Control of Bacteria	3 hours
٥	Kingdom of Protesta, Simple Algea, Harmful of Algea Kingdom of Protesta, Protozoans, Classification of Protozoa	3 hours
٦	Phylum of Sarcodina, Ameobaes, Phylum of Zoomastigin,	3 hours
٧	Trypanosoma, Giardia Phylum of Sporozoa, Plasmodium	3 hours
٨	kingdom of Fungi, Classification, Reproduction, Harmful Activities of Fungi	3 hours
٩	Yeast and Yeast like Fungi, Characteristics and Classification, Candida	3 hours
١٠	Kingdom of Animal, Classification, Invertebrates and Vertebrates Importance to Human Diseases	3 hours
١٢	Human Bodies, Protection, Support and Locomotion	3 hours
١٣	DNA, RNA structures , Gene and Gene action	3 hours
١٤	Body Defense (Immunity, Antigene, Antibody)	3 hours
١٥	Flat Worms, Round Worms ,Classification, Harm full Activities to Human	3 hours

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).

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

1. Course Name:
Biostatistics
2. Course Code:
3. Semester / Year:
Semester 2 / second
4. Description Preparation Date:
30/7/202٦
5. Available Attendance Forms: official full attendance
attendance in the classrooms
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 2units
7. Course administrator's name (mention all, if more than one name)
Hussein Talib Jawad Hussein.t.jawad@gu.edu.iq
8. 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.
9. 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.
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٢	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	٢	Methods of presentation of data	Introduction ,Ordered Arrays, Frequency distribution , Graphs	Lectures/Discussions	Participation, Discussion, Exam, and Homework
3	٢	Descriptive Statistic: Measures of Central Tendency	(Arithmetic Mean, Median, Mode) of Ungroup and group data	Lectures/Discussions	Participation, Discussion, Exam, and Homework
4	٢	Descriptive Statistic: Measures of Dispersion	Range, Variance, Standard Deviation,Coefficient of Variation , Standard Errs	Lectures/Discussions	Participation, Discussion, Exam, and Homework
٥	٢	Percentiles, Quartiles and Interquartile Rang	Percentiles, Quartiles and Interquartile Rang	Lectures/Discussions	Participation, Discussion, Exam, and Homework
٦	٢	Normal distribution	Normal distribution Application s	Lectures/Discussions	Participation, Discussion, Exam, and Homework
٧	٢	Moments, Skewness and Kurtosis	Moments, Skewness and Kurtosis	Lectures/Discussions	Participation, Discussion, Exam, and Homework
٨	٢	Probability Theory	Elementary Probability Theory	Lectures/Discussions	Participation, Discussion, Exam, and Homework
٩	٢	Statistical Estimation Theory	Estimation of Population parameters, by Point and by Interval	Lectures/Discussions	Participation, Discussion, Exam, and Homework
١٠	٢	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
١١	٢	t- test	Different type of t-test	Lectures/Discussions	Participation, Discussion, Exam, and Homework
١٢	٢	Chi-Square	Chi-Square significance tests.	Lectures/Discussions	Participation, Discussion, Exam, and Homework
١٣	٢	One-way ANOVA test	One-way ANOVA test	Lectures/Discussions	Participation, Discussion, Exam, and Homework
١٤	٢	Simple Correlation Coefficients	Simple Correlation Coefficients	Lectures/Discussions	Participation, Discussion, Exam, and Homework
١٥	٢	Simple Liner Regression	Simple Liner Regression	Lectures/Discussions	Participation, Discussion, Exam, and Homework

2. 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.

3. 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

11. Course Name:
Helminths
12. Course Code:
MLT23216
13. Semester / Year:
First semester\ second stage \
14. Description Preparation Date:
19\7\202٦
15. Available Attendance Forms: official full attendance
Attended only
16. Number of Credit Hours (Total) / Number of Units (Total)
60
17. Course administrator's name (mention all, if more than one name)
M. Sc. Russul Emad
18. 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
19. Teaching and Learning Strategies
- Lectures - 1- Conducting practical experiments - 2- Reading textbooks

- 3- Conducting scientific discussions
- 4- Reading textbooks
- 5- Using (Data Show)

20. 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
٥	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
٦	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
٧	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

١٠	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
١١	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

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
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١٥		

4. Course evaluation

weekly examination
reports
Homeworks

5. 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

21. Course Name:
Basic immunology
22. Course Code:
MLT 226
23. Semester / Year: Semester
24. Description Preparation Date:
20-7-202٦
25. Available Attendance Forms: official full attendance
official full attendance
26. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 3) / Number of Units (Total 30)
27. Course administrator's name (mention all, if more than one name)
Professor doctor tareq Jaafar Aljandeel
28. 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
29. Teaching and Learning Strategies
1- **Lectures** 2- **Conducting practical experiments** 3- **Reading textbooks** 4- **Engaging in scientific discussions** 5- **Performing laboratory experiments**
30. 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***
٥		Antigenic determination , definition, properties ,epitopes	2	official full attendance	***Exams***
٦		Antibody definition ,structures, types, properties, monoclonal AB formation	2	official full attendance	***Exams***
٧		Monoclonal antibody definition, formation, their uses	2	official full attendance	***Exams***
٨		Antigen-Antibody reaction properties ,uses	2	official full attendance	***Exams***
٩		Immune response primary I.R. ,secondary I.R., regulation I.R	2	official full attendance	***Exams***
١٠		MHC definition, types, role in organ rejection	2	official full attendance	***Exams***
١١		Complement definition, activation ,type of activation, complement deficiency, properdin	2	official full attendance	***Exams***
١٢		Cytokines and Mediators	2	official full attendance	***Exams***
١٣		Mucosal immune system	2	official full attendance	***Exams***
١٤		Antiviral immunity	2	official full	***Exams***

				attendance	
١٥		Antibacterial immunity	2	official full attendance	***Exams***

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١	Collection of blood specimen , preparation of R.B.Cs suspension	2
٢	Normality , Dilution and their methods	2
٣	Antigen preparation, bacterial Ag : R.B.Cs Ag , protein Ag .	2
٤	Natural antibodies study .	2
٥	Effect of complement against bacteria	
٦	Monoclonal antibodies preparation	2
٧	Ag – Ab reaction: Agglutination test.	2
٨	Precipitation test.	2
٩	Ouchterlony test.	2
١٠	MHC : typing & its relation of organ rejection	2
١٢	Complement activation.	2
١٣	Cytokines & their uses.	2
١٤	Immunology Agglutination Agglutination techniques test	2
١٥	Imunofluorescence Techniques ELISA ELISA Radioimmunoassay Inhibition technique	2

6. Course evaluation weekly examination reports Homeworks	
7. 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

31. Course Name:
Protozoa
32. Course Code:
MEL237
33. Semester / Year:
Seconded semester\ second stage \2-26-202٦
34. Description Preparation Date:
19\7\2025
35. Available Attendance Forms: official full attendance
Attended only
36. Number of Credit Hours (Total) / Number of Units (Total)
60
37. Course administrator's name (mention all, if more than one name)
M. Sc. Russul Emad
38. 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
39. Teaching and Learning Strategies

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

40. 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
٥	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
٦	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
٧	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	protozoa	Power point use of the display screen, educational videos,	Reports - Mini-workshops - Daily short exams -

		of Trichmonus spp		interactive lecture, group discussion	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
١٠	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
١١	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
١٢	4	Plasmodium spp (vivix , ovale 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
١٣	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
١٤	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 (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
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8. Course evaluation

weekly examination
reports
Homeworks

9. 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- Helminthology

41. Course Name:
Helminthology
42. Course Code:
43. Semester / Year:
Autumn semester
44. Description Preparation Date:
July2026
45. Available Attendance Forms: official full attendance
46. Number of Credit Hours (Total) / Number of Units (Total)
30 hours

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

Dr. Mohammed,ABDULLA
Assistant lecturer Russel Imad

48. 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

49. 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

50. 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,	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

		understand 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
٥		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
٦		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
٧		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
٨		As above	**MEDICALLY IMPORTANT TREMATODES**	As above	As above
٩		As above	**NEMATODES (ROUND WORMS)**	As above	As above
١٠		As above	**NEMATODES (ROUND WORMS)**	As above	As above
١١		As above	**NEMATODES (ROUND WORMS)**	As above	As above
١٢		As above	**LARVA MIGRANS**	As above	As above
١٣		As above	**INTESTINAL NEMATODES WITHOUT TISSUE STAGE**	As above	As above
١٤		As above	**TISSUE NEMATODES**	As above	As above
١٥		As above	Medical Entomology	As above	As above

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	Hours
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١٤		
١٥		

10. Course evaluation

weekly examination
reports
Homeworks

11. 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

51. Course Name:
Protozoology
52. Course Code:
53. Semester / Year:
Spring semester
54. Description Preparation Date:
July 2026
55.Available Attendance Forms: official full attendance
56.Number of Credit Hours (Total) / Number of Units (Total)
30 hours
57. Course administrator's name (mention all, if more than one name)
58. 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.

59. 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.

60. 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 parasites on human and animal health. Students should also develop skills in practical laboratory identification, research, and communication of scientific information	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 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	In protozoology, evaluation methods encompass a range of approaches to assess student learning, including written exams, practical assessments, and continuous evaluation. 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		
٥	2		AMOEBIASIS		
٦	2		OTHER AMEBAE INHABITING		

			THE ALIMENTARY CANAL		
٧	2		PATHOGENIC FREE-LIVING AMOEBAE		
٨	2		Mastigophora-Giardia		
٩	2		TRICHOMONADS (CLASS TRICHOMONADA		
١٠	2		Other flagellates inhabiting the alimentary canal		
١١	2		Haemoflagelates-Leishmania		
١٢	2		Trypanosoma		
١٣	2		COCCIDIA (SPOROZOA)-Malaria		
١٤	2		Toxoplasma and Cryptosporidium		
١٥	2		Medical Helminthology		

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١	Introduction to parasitology lab, deal with instruments	4
٢	Sample collection and solution used in lab	4
٣ ٤	Preservation of stool sample General stool examination for non parasitic finding	4
٥	Slide demonstration and lab diagnosis of E. histolytica	4
٦	Slide demonstration of non pathogenic amoeba	4
٧	Slide demonstration and lab diagnosis of G. lamiblia	4
٨	Slide demonstration and lab diagnosis Trichomonas spp	4
٩	Demonstration of leishmania spp	4
١٠	Slide demonstration and lab diagnosis Trypanosoma brucei	4
١1	Slide demonstration and lab diagnosis Trypanosoma cruzi	4
١2	Plasmodium spp . (vivax , ovale and blood film preparation)	4
١3	Plasmodium spp (P. falciparum and blood film preparation)	4
١4 15	Plasmodium spp (P. falciparum and blood film preparation) Cryptosporidium & toxoplasma	4

12. Course evaluation

weekly examination
reports
Homeworks

13. 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 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	

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

61. Course Name:
Epidemiology
62. Course Code:
MEL 239
63. Semester / Year:
First semester\ second stage
64. Description Preparation Date:
19\7\2026
65. Available Attendance Forms: official full attendance
Attended only
66. Number of Credit Hours (Total) / Number of Units (Total)
1/15
67. Course administrator's name (mention all, if more than one name)
M. Sc. Russul Emad
68. 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).

69. Teaching and Learning Strategies

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

70. 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
٥	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
٦	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

٧	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
٨	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
٩	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
١٠	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
١١	1	Epidemic Investigation and Management	Epidemiology	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
١٢	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
١٣	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
١٤-15	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

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

weekly examination
reports
Homeworks

15. 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

71. Course Name:
Genetic engineering
72. Course Code:
MEL440
73. Semester / Year:
one Semesters
74. Description Preparation Date:
١٧ / 7 / 2026
75. Available Attendance Forms: official full attendance
In-person only
76. Number of Credit Hours (Total) / Number of Units (Total)
60 hours / 3 units
77. Course administrator's name (mention all, if more than one name)

Zaedoon Monaam Mohammed

78. 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.

79. 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)

80. 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

٥	2 hours	Genomic Libraries and Screening	Hemolytic anemia testing	PowerPoint presentations, Videos, In-person lectures	Theoretical and practical exams and quizzes
٦	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
٧	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
٨	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
٩	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
١٠	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
١١	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
١٢-13	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

16.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.

17. 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.

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Course Description Form

81. Course Name:
Medical microbiology
82. Course Code:
MEL 232
83. Semester / Year: Semester

Semester
84. Description Preparation Date:
20-7-202٦
85. Available Attendance Forms: official full attendance
official full attendance
86. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 30) / Number of Units (Total 30)
87. Course administrator's name (mention all, if more than one name)
Professor doctor Suhad Saad Mahmood
88. 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.
89. Teaching and Learning Strategies
1- **Lectures** 2- **Conducting practical experiments** 3- **Reading textbooks** 4- **Engaging in scientific discussions** 5- **Performing laboratory experiments**
90. 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 (Listeria and corynbacterium) Gram negative cocci: Neiseria	2	official full attendance	*Exams*
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
١	Microbial sensitivity to antibiotic.	2
٢	Microscopy and data analysis.	2
٣	Microscopy and data analysis.	2
٤	Microscopy and data analysis.	2
٥	Culturing of selective and deferential media. API system.	
٦	Culturing of selective and deferential media. API system.	2
٧	Microbial sensitivity to antibiotic.	2
٨	Microbial sensitivity to antibiotic.	2
٩	Microscopy and data analysis.	2
١٠	Microscopy and data analysis.	2
١٢	Microscopy and data analysis.	2
١٣	Bacterial examination of water or food.	2
١٤	Medical Mycology	2

١٥	Medical Mycology	2

18. Course evaluation

weekly examination
reports
Homeworks

19. 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

91. Course Name:
Medical microbiology
92. Course Code:
MEL231
93. Semester / Year: Semester
Semester
94. Description Preparation Date:
20-٣-202٦
95. Available Attendance Forms: official full attendance
official full attendance
96. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total 30) / Number of Units (Total 3)
97. Course administrator's name (mention all, if more than one name)
Professor doctor SUHAD SAAD MAHMOOD
98. 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 resistar to the studied diseases. Also, to know the epidemiology and symptoms of microb diseases and to control each disease.

99. Teaching and Learning Strategies

1- **Lectures**

2- **Conducting practical experiments**

3- **Reading textbooks**

4- **Engaging in scientific discussions**

5- **Performing laboratory experiments**

100. 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 factors and pathogenesis of bacterial infection	2	official full attendance	***Exams***
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

20. Course evaluation

weekly examination
reports
Homeworks

21. 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

101. Course Name:
Molecular Biology
102. Course Code:
MLT23214
103. Semester / Year:
Spring Semester (Second semester)٢٠٢٦
104. Description Preparation Date:
٢٤/ ٢ / 2026
105. Available Attendance Forms: official full attendance
In-person only
106. Number of Credit Hours (Total) / Number of Units (Total)
٣0 hours / 3 units
107. Course administrator's name (mention all, if more than one name)
mustafa.faris@gu.edu.iq : Email Mustafa Faris Husain :Name
108. Course Objectives
Molecular biology is concerned with the study of life at the molecular level. Therefore, it overlaps with microbiology and chemistry in several branches and intersects with biochemistry and genetics in various areas and specializations. Molecular biology studies the various interrelationships between all cellular systems, particularly the relationships between deoxyribonucleic acid (DNA) and ribonucleic acid (RNA), protein synthesis, the mechanisms regulating this process, and all other biological processes. Specific objectives: By the end of the course, the student will be able to: 1. Understand the three-dimensional structures and structural configurations of human nucleic acids, as well as understand the molecular basis of the processes of transcription, replication, and gene translation.
109. 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)

110. 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	Introduction to molecular biology and nucleic acids Structure of DNA- Primary structure)	"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	Secondary structure of DNA DNA types and special structures	"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	Molecular Structure of Ribonucleic acid (RNA)	"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	DNA Organization in the cell	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
٥	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	DNA replication	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
٦	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	DNA Transcription and transcriptional modification processes	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
٧	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Translation and post translational modifications and protein synthesis	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
٨	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Gene expression and Regulation	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

٩	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	genetic code and applications of genetic code	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
١٠	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	DNA damage, types and repair systems and mechanisms	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
١١	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	DNA and Gene mutations	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
١٢	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Disorder of cell growth and Carcinogenesis	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
١٣	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Introduction to Recombinant DNA technology	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
١٤	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	1- Restriction enzymes Cloning vectors	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams
١٥	2Hours	Providing students with the ability to apply theoretical knowledge in practical and research contexts	Introduction to genetic engineering	"Hybrid in-person lecture"	Quizzes, monthly exams, and final semester exams

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١	Laboratory Equipment's and materials used in Molecular Biology Laboratory	3 hours
٢	DNA isolation DNA extraction	3 hours
٣ ٤	RNA isolation	3 hours
٥	Quantification of DNA concentration with Nanodrop	3 hours

٦	Replication Models	3 hours
٧	Agarose gel electrophoresis	3 hours
٨	Translation and post translational modifications and protein synthesis	3 hours
٩	Hybridization techniques	3 hours
١٠	DNA denaturation	3 hours
١٢	renaturation and melting	3 hours
١٣	PCR	3 hours
١٤	RFLP technique	3 hours
١٥	Brief outline on molecular	3 hours

22. Course evaluation

Course Assessment (Assessmental Material)

Distributed as follows: 40 marks for student effort consisting of (20 marks for theory + 20 marks for practical) and 60 marks for the final exam divided into 10 marks for the practical final exam (40 marks for the theoretical final exam + 10 marks for the practical final exam)

23. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References 1- **Molecular Cell Biology** – Lodish, Berk, Kaiser 2- **Molecular Biology: Principles and Practice** – Cox, Doudna & O'Donnell 3- **Basic Methods in Molecular Biology** – Davis 4- **Campbell Biology** – Reece
Main references (sources)	Molecular Biology of the Gene – James Watson
Recommended books and references (scientific journals, reports…)	• " Principles of Molecular Genetics Urry, Michael • Molecular Biology and Genomics Techniques in Molecular Biology
Electronic References, Websites	• PubMed / NCBI Biology Online

Course Description Form

111. Course Name:

entomology

112. Course Code:

mlt36235

113. Semester / Year:

Seconded semester\ third stage \2-26-202٦

114. Description Preparation Date:

19\7\2025

115. Available Attendance Forms: official full attendance

Attended only

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

3\26

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

Shams Sallah aldeen

118. 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

119. Teaching and Learning Strategies

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

120. 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
٥	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
٦	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
٧	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
٨	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
٩	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
١٠	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
١١	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
١٢	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
١٣	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
١٤	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
١٥	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	

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١		
٢		
٣ ٤		
٥		
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٧		
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٩		
١٠		
١٢		
١٣		
١٤		
١٥		

24. Course evaluation

weekly examination
reports
Homeworks

25. 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, Melnicl Adelberg's)

Recommended books and references (scientific journals, reports…)	. Articles in PubMed Keywords: "Insect vector diseases", "intermediate host insects" WHO Vector Control Manuals a Reports
Electronic References, Websites	https://www.ncbi.nlm.nih.gov/books/ https://www.cdc.gov/ncezid/dvbd/index.html

Course Description Form

121. Course Name:
Methods of research
122. Course Code:
HMT36231
123. Semester / Year:
Seconded semester\ third stage \2−26−2026
124. Description Preparation Date:
19\7\2026
125. Available Attendance Forms: official full attendance
Attended only
126. Number of Credit Hours (Total) / Number of Units (Total)
2\30
127. Course administrator's name (mention all, if more than one name)
SHAMS SALLAH ALDEEN
128. Course Objectives
Course Objectives The course introduces the students to the world of research by providing them with working knowledge of the concepts and methods in the conceptualization and conduct of research. It covers topics on the nature of research, the research problem, related literature, research methodology, sampling, instrumentation, data collection, data presentation, data analysis and interpretation, writing the summary, conclusions and recommendations, the research report and evaluating the research report
129. Teaching and Learning Strategies
- Lectures - 1- Conducting practical experiments - 2- Reading textbooks - 3- Conducting scientific discussions - 4- Reading textbooks

130. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	**Introduction and Basic Concepts in Research**	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
2	2	**The Research Problem**	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
3	2	**Related Literature**	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
4	2	**Research Methodology**	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
٥	2	Causal-Comparative research Experimental Research Definitions Experimental designs Quasi-experimental designs Qualitative Research Respondents of the Study Target Population	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture,	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

		Sampling		group discussion	
٦	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**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
٧	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**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
٨	2	The Hypothesis Sampling Population and Sample Overview of the Research Process Hindrances Encountered in Research	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
٩	2	Research Hypothesis and Null Hypothesis Theoretical/Conceptual Framework Scope and Delimitation of the Study Significance of the Study Definition of Terms.	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
١٠	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**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
١١	2	**Writing the Summary, Conclusion and Recommendation** Guidelines in Writing the Summary Guidelines in Writing the Conclusion	**Methods of research**	Theoretical use of the display	Reports - Mini-workshops - Daily short

		Guidelines in Writing the Recommendation Methods of Research Syllabus		screen, educational videos, interactive lecture, group discussion	exams - Semester exam - Final exam
١٢	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**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
١٣	2	**The Research Report** Format of the Research Report The Thesis or Dissertation Style of Writing Reference Form Footnote	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
١٤	2	Bibliography Pagination Tables Figures Evaluating A Research Report Methods of Research Syllabus	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam
١٥	2	Comprehensive course evaluation * Student presentations or a simple research project	**Methods of research**	Theoretical use of the display screen, educational videos, interactive lecture, group discussion	Reports - Mini-workshops - Daily short exams - Semester exam - Final exam

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١		
٢		
٣ ٤		
٥		
٦		
٧		
٨		
٩		
١٠		
١٢		
١٣		
١٤		
١٥		

26. Course evaluation

weekly examination
reports
Homeworks

27. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	**لايوجد**
Main references (sources)	خالد، 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

131. Course Name:
Hematology
132. Course Code:

MLT٣٥٢٢٧

133. Semester / Year:

١٧/3/2026

134. Description Preparation Date:

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

135. Available Attendance Forms: official full attendance

My presence only

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

٣٠=Total number of theoretical hours

٤٥ = Total number of practical hours

٣= Number of units

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

Name: ZAEDOON MONAAN

138. 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.

139. 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....

140. 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
٥	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Anemia (definition, causes, classification)	Powerpoint	Theoretical and practical exams
٦	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
٧	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
٨	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Folatedeficiency (causes, diagnosis)	Powerpoint	Theoretical and practical exams
٩	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemolytic anemia	Powerpoint	Theoretical and practical exams
١٠	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Hemolytic anemia	Powerpoint	Theoretical and practical exams
١١	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Thalassemia (definitions, types, causes and diagnosis)	Powerpoint	Theoretical and practical exams
١٢	2	Preparing students and professionals to apply theoretical knowledge in real	Sickle cell anemia	Powerpoint	Theoretical and practical exams

		clinical and laboratory scenarios.				
١٣	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Aplastic anemia	Powerpoint	Theoretical and practical exams	
١٤	2	Preparing students and professionals to apply theoretical knowledge in real clinical and laboratory scenarios.	Polycythemia	Powerpoint	Theoretical and practical exams	
١٥	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 knowledge in real clinical and laboratory scenarios.	Malignant diseases of WBCs (Leukemia, definition of it, types, classification, causes, leukemoid reaction)	Powerpoint	Theoretical and practical exams	
21	2	Preparing students and professionals	Acute leukemia (acute lymphocytic leukemia ,	Powerpoint	Theoretical and practical exams	

		to apply theoretical knowledge in real clinical and laboratory scenarios.	acute myeloid leukemia) causes and diagnosis of each one			
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
١	Blood collection	3
٢	Anticoagulant	3
٣	Normal value of all blood components according to age	3
4	Hb estimation by different methods	3
٥	Packed cell volume PCV	3
٦	RBCs count (manual) and automated RBCs count	3
٧	Red cell indices MCV, MCH, MCHC	3
٨	Blood film preparation	3
٩	Blood film preparation	3
١٠	Study of red cell morphology in health and disease	3
١1	Inclusion bodies in red blood cells	3
١2	Osmotic fragility test and reticulocyte count	3
١3	Sickle cell test and electrophoresis	3
١4	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

28.Course evaluation weekly examination reports Homeworks

29. 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.(٢٠١٦) Hematology in clinical practice. Roberts. S. Hillman and Kenneth A , 5th edition , McGraw Hill Lange medical books.(٢٠١١) Dacie and Lewis Practical hematology. S.Mitchell. Lewis and Barbara J. Bain, 10th edition , Churchill Livingstone Elsevier.(٢٠٠٦)
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

141. Course Name:
Human genetic
142. Course Code:
MLT٣٦٢٣٤
143. Semester / Year:
The third stage is one semester, with an average of 15 lectures.
144. Description Preparation Date:
١٧/4/2026
145. Available Attendance Forms: official full attendance
My presence only
146. 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
147. Course administrator's name (mention all, if more than one name)
Name: Mayada Hamid Mahdi Hotmail.co.uk@mayada74
148. Course Objectives

The course's objectives are to train students theoretically and practically on the foundations of medical genetics 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.

149. 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…

150. 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 principles to diagnosis and laboratory analysis.	The chromosomes History -structure number karyotyping	Integrated in-person lecture	Monthly and quarterly exams and quizzes
۵	2	Understand the genetic basis of diseases and	The chromosomes	Integrated in-person lecture	Monthly and quarterly exams and quizzes

		apply genetic principles to diagnosis and laboratory analysis.	History -structure number karyotyping		
٦	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
٧	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
٨	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
٩	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
١٠	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
١١	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
١٢	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
١٣	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
١٤	2	Understand the genetic basis of diseases and apply genetic principles to diagnosis and laboratory analysis.	Recessive inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes

١٥	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 to diagnosis and laboratory analysis.	Mutagens carcinogenic in the environment	Integrated in-person lecture	Monthly and quarterly exams and quizzes

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 to diagnosis and laboratory analysis.	Family pedigree, symbols ,determination the type of inheritance	Integrated in-person lecture	Monthly and quarterly exams and quizzes

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
١	Instruments &materials used in medical genetics field	2
٢	Laboratory safety	2
3	Introduction to medical genetics (detection of some inherited traits	
٤	Introduction to medical genetics (detection of some inherited traits	2
٥	Introduction to medical genetics (detection of some inherited traits	2
٦	Cell division	2
٧	Cell division	2
٨-20	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

30. Course evaluation

weekly examination
reports
Homeworks

31. Learning and Teaching Resources

Required textbooks (curricular books, if any)	References -١Lessard, Juliane C. "Molecular cloning". Methods in Enzymology. 529: 85–98. -٢Gardner A , Howell R and Davies T . (2000) ." Human genetics" -٣Chopra V L and Nasim A . (1996) Genetic Engineering and biotechnology , Concepts , methods , application -٤Daniel 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

1. Course Name:
Virology
2. Course Code:
MLT323
3. Semester / Year:
Autumn/ 2025-2026
4. Description Preparation Date:
25/2/2026
5. Available Attendance Forms: official full attendance
Attend lectures in person
6. Number of Credit Hours (Total) / Number of Units (Total)

30 Hours/ 2 Hours (Theoretical), 2 Hours (Practical)
7. Course administrator's name (mention all, if more than one name)
Assistant Lecturer MAY SALEM ABDULLAH
8. 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.

9. 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 Viruslike 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 & Laboratory Diagnosis of Viruses.	Lecture	Quizzes, Exams, Seminars, Discussions
		immunity) following viral infection. Explaining the different laboratory 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,	Human Immune Deficiency virus	Lecture	Quizzes, Exams, Seminars, Discussions
		transmission, treatment and vaccine (if available).			
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, replication, pathogenicity, diseases, laboratory diagnosis, transmission, treatment and vaccine (if available).	Paramyxoviruses and Orthomyxoviruses	Lecture	Quizzes, Exams, Seminars, Discussions

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 structure, classification, replication, pathogenicity, diseases, laboratory	Oncogenic Viruses, Antiviral drugs and viral vaccines	Lecture	Quizzes, Exams, Seminars, Discussions
		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.			

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

1. Course evaluation

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

2. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Medical Virology: White, D. E., Fenn Frank
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

151.	Course Name:
Histopathology	
152.	Course Code:
MLT35226	
153.	Semester / Year:
Autumn and Spring semester	
154.	Description Preparation Date:
6 March 2025	
155.	Available Attendance Forms:
Yes	
156.	Number of Credit Hours (Total) / Number of Units (Total)
3	
157.	Course administrator's name (mention all, if more than one name)
Name: Ass. Lect. Mohammed Ismael Majeed Email: mohammed.ismael@gau.edu.iq	
158.	Course Objectives
Specific Learning Objectives At the end of the course, Establish a good information base on pathology and techniques for preparing, staining and preserving tissue sections so that the stude can keep pace with the medical community that he will live with after graduation in hospitals.	
159.	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.	

160. 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 maligna 11 Nomenclature of tumors Classification of tumors Fixation &Fixatives Theoretical aspects of Fixa Most common fixatives i	Lecture Power point	Quizzes brain stormir

			common use. 13 Fixation special substances Speciali Techniques for individua tissue &bfixation Arte fact Tissue processing Fixatic ,dehydration ,clearing ,embedding.		

161. Course Evaluation	
60%	
162. 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

163. Course Name:
Endocrinology & Clinical Enzymology
164. Course Code:
MLT35230
165. Semester / Year:
Semester

166. Description Preparation Date:

25-2-2026

167. Available Attendance Forms: official full attendance

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

30/30 hours theory and practical

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

Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq

170. 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

171. 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)

172. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٢	**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	٢	**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	٢	**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	٢	**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
٥	٢	**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
٦	٢	**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
٧	٢	**Glycogen Metabolism**: Storage of glucose in liver/muscles and its retrieval when needed.	**Glycogen Metabolism**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
٨	٢	**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
٩	٢	**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
١٠	٢	**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
١١	٢	**Lipid Metabolism**: Breakdown of lipids to produce energy or store them as reserves.	**Lipid Metabolism**	Personal educational lectures using Data Show (PowerPoint)	• Short examinations • Midterm examination • Final examination

				program	
١٢	٢	**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
١٣	٢	**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
١٤	٢	**Balance of salts and trace elements**	**Minerals and Vitamins**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
١٥	٢	**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
١	**Introduction to Clinical Biochemistry Laboratory and Safety Procedures**	٢
٢	**Spectrophotometric Measurement**	٢
٣	**Estimation of Serum Amylase Activity**	
4	**Estimation of Salivary Amylase Activity**	٢
٥	**Fasting and Postprandial Blood Glucose**	٢
٦	**Glucose Tolerance Test (GTT)**	٢
٧	**Estimation of Serum Cholesterol (Total and High-Density Lipoprotein)**	٢
٨	**Estimation of Serum Triglycerides**	٢
٩	**Estimation of Ketone Bodies in Urine**	٢
١٠	**Introduction: Types of Proteins**	٢

١٢	**Estimation of Total Serum Protein**	٢
١٣	**Introduction to Albumin and Its Benefits in the Body**	٢
١٤	**Practical Tests on Previous Experiments**	٢
١٥	**Practical Tests on Previous Experiments**	٢

32. Course evaluation

weekly examination
reports
Homeworks

33. 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

173. Course Name:
Clinical Biochemistry
174. Course Code:
MLT36232
175. Semester / Year:
Semester
176. Description Preparation Date:
25-2-2026
177. Available Attendance Forms: official full attendance

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

30/30 hours theory and practical

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

Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq

180. 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

181. 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)

182. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٢	*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	٢	*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	٢	**Mineral metabolism** **Role, disorders, tests**	**Mineral Metabolism** **Electrolytes: Sodium (Na), Potassium (K),**	Personal educational lectures using	• Short examinations • Midterm

			Chloride (Cl), Magnesium (Mg), Calcium (Ca)	Data Show (PowerPoint) program	examination • Final examination
4	٢	**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
٥	٢	**Blood gases classification**	**Blood Gases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
٦	٢	**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
٧	٢	**Types of diabetes and its tests**	**Diabetes Mellitus**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
٨	٢	**Types of diabetes and its tests**	**Diabetes Mellitus**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
٩	٢	**Understanding kidney functions**	**Kidney Functions**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
١٠	٢	**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
١١	٢	**Liver function and its disorders**	**Liver Functions**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
١٢	٢	**Liver function and its disorders**	**Liver Function Disorders**	Personal	• Short examinations •

				educational lectures using Data Show (PowerPoint) program	Midterm examination • Final examination
١٣	٢	**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
١٤	٢	**Types of tumor markers and their importance**	**Tumor Markers**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
١٥	٢	**Types of tumor markers and their importance**	**Tumor Markers**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

Course description (practical)		
weeks	**Laboratory sessions & *Clinical requirements***	hours
١	*Estimation of serum Na, K, Li, Ca using: - Flame photometry*	٢
٢	*Estimation of serum Na, K, Li, Ca using: Ion-selective electrode (ISE)*	٢
٣ ٤	*Chemical estimation of serum iron*	٢
٥	*Chemical estimation of serum calcium*	٢
٦	*Blood gas estimation and blood pH determination: Use and maintenance of blood gas analyzer*	٢
٧	*Blood gas estimation and blood pH determination: Proper handling of blood samples for gas analysis*	٢
٨	*Estimation of glycated hemoglobin HbA1c*	٢
٩	*Estimation of glycated hemoglobin HbA1c*	٢
١٠	*Liver function tests (LFT): - Alanine aminotransferase (ALT) and Aspartate aminotransferase (AST)*	٢
١٢	*Liver function tests (LFT): - Alkaline phosphatase (ALP) and γ-glutamyl transferase (GGT)*	٢

١٣	*Liver function tests (LFT): - Bilirubin: Total, direct, and indirect*	٢
١٤	*Kidney function tests: - Estimation of blood urea*	٢
١٥	*Kidney function tests: - Estimation of blood creatinine and creatinine clearance*	٢

34. Course evaluation

weekly examination
reports
Homeworks

35. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• **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

183. Course Name:
Blood transfusion
184. Course Code:
MEL440
185. Semester / Year:
two Semesters
186. Description Preparation Date:
١٧ / 3 / 2026
187. Available Attendance Forms: official full attendance
In-person only
188. Number of Credit Hours (Total) / Number of Units (Total)
60 hours / 3 units
189. Course administrator's name (mention all, if more than one name)
Zaedoon Monaam Mohammed
190. 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.**
191. 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)
192. 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
٥	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
٦	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
٧	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

٨	4 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
٩	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
١٠	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
١١	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
١٢-13	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

36.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.

37. 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.

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Course Description Form

193. Course Name:
Diagnostic bacteriology
194. Course Code:
MEL 433
195. Semester / Year: Semester

Diagnostic Bacteriology

196. Description Preparation Date:

20−1−2026

197. Available Attendance Forms: official full attendance

official full attendance

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

Number of Credit Hours (Total 3) / Number of Units (Total 30)

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

Professor doctor SUHAD SAAD

200. 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.

201. Teaching and Learning Strategies

1- **Lectures**

2- Conducting practical experiments

3- Reading textbooks

4- Engaging in scientific discussions

5- Performing laboratory experiments

202. 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	3	official full attendance	*Exams*

		Bloodstream infections			
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 techniques as Mycobacteria (Lowenstein Jensen or Middlebrook agar), Leptospira (serology)	2
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	

38. Course evaluation

weekly examination
reports
Homeworks

39. 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

1. Course Name:
Antibiotics
2. Course Code:
MEL445
3. Semester / Year:
Autumn/ 2025-2026
4. Description Preparation Date:
25/2/ 2026
5. Available Attendance Forms: official full attendance
Attend lectures in person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Hours
7. Course administrator's name (mention all, if more than one name)
Assistant Lecturer MAY SALEM ABDULLAH
8. 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. narrowspectrum). -Pharmacokinetics and Pharmacodynamics:

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

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

-Understanding mechanisms of bacterial resistance to antibiotics and how bacteria become resistant antibiotics (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 patient 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 health in the context of AMR. 5. Carry on and encourage research on antibiotics.

9. Teaching and Learning Strategies

-Lectures.

- Performing laboratory experiments.

- Reference books, reports and journals.

- Discussions.

- Data show.

-Seminars.

- Quizzes and Examinations.

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10. 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	Beta lactam Penicillins	Lecture	Quizzes, Exams, Seminars, Discussions
		Mechanism of Action			

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 Mechanism of Action of Aminoglycosides	Aminoglycosides	Lecture	Quizzes, Exams, Seminars, Discussions
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

Course description (practical)/ There is no practical course.		
weeks	Laboratory sessions & *Clinical requirements*	Hours
1	Principles of Antibiotic suitability test (C&S)	2
2 3	Disc diffusion method	2 2
4	Minimum inhibitory curve	2

5 6 7	Advanced AST techniques	6
8	Reading the AST results	2
9	Interpretation of results	2
10	CLSI {Clinical and Laboratory Standards Institute which provides Guidelines and the gold standard, consensus-based guidelines for antimicrobial susceptibility testing (AST) used in practical, clinical, and research settings}.	2
11 12	Molecular methods for studying antibiotic resistance	2 2
13 14 15	Statistical method for study AST techniques	2 2 2

1. Course evaluation:
   - -Weekly and Monthly Examinations
   - -Reports
   - -Home works
   - -Seminars
   - -Discussions

2. 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

203. Course Name:
Advance clinical Biochemistry
204. Course Code:
MLT47238
205. Semester / Year:
Semester
206. Description Preparation Date:
25-2-2026
207. Available Attendance Forms: official full attendance
208. Number of Credit Hours (Total) / Number of Units (Total)
30/30 hours theory and practical
209. Course administrator's name (mention all, if more than one name)
Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq
210. 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**

211. 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)

212. 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	**Biological Safety**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

		• Safe handling of biological specimens			
4	2	• Fire safety and control of other hazards • Emergency procedures and evacuation protocols • Safety equipment maintenance	**Fire Safety and Hazard Control**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
٥	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
٦	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
٧	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
٨	2	• Specimen collection (urine, blood, feces, cerebrospinal fluid, and other body fluids)	**Comprehensive Specimen Management**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

		• Specimen handling (maintenance of identification, preservation, separation, storage, and transport) • Pre-analytical variables affecting specimen quality			
٩	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
١٠	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
١١	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
١٢	2	• Control of analytical variables • Internal quality control procedures	**Analytical Quality Control**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination

		• External quality assessment programs			
١٣	2	• High-performance liquid chromatography (HPLC) • Gas chromatography-mass spectrometry (GC-MS) • Electrophoresis techniques	**Advanced Clinical Chemistry Techniques**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
١٤	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
١٥	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
١	**Laboratory Safety Protocols**	**2**
٢	**Laboratory Equipment and Instrumentation**	**2**
3	**Laboratory Measurements and Standards**	**2**
٤	**Laboratory Water Systems and Reagents**	**2**
٥	**Specimen Collection and Processing**	**2**
٦	**Spectroscopic Methods**	**2**
٧	**Chromatographic Techniques**	**2**
٨	**Electrophoretic Techniques**	**2**
٩	**Immunoassay Technologies**	**2**
١٠	**Molecular Diagnostic Techniques**	**2**

١1	**Laboratory Quality Control**	**2**
١2	**Method Validation and Verification**	**2**
١3	**Proficiency Testing and External Quality Assessment**	**2**
١4	**Laboratory Accreditation Standards**	**2**
15	**Laboratory Statistics and Data Analysis**	**2**

40. Course evaluation

weekly examination
reports
Homeworks

41. 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

213. Course Name:
Advance clinical biochemistry
214. Course Code:
MLT48244
215. Semester / Year:
Semester
216. Description Preparation Date:
25-2-2026
217. Available Attendance Forms: official full attendance
218. Number of Credit Hours (Total) / Number of Units (Total)
30/30 hours theory and practical

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

Asmiel Sadeq Khashan asmiel.s.khashan@gu.edu.iq

220. 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**

221. 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)

222. 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
٥	2	Newborn screening programs Inherited metabolic diseases Growth and development markers	**Pediatric Metabolic Disorders**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
٦	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
٧	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
٨	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

٩	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
١٠	2	Cardiac biomarker interpretation Lipid profile case studies Risk assessment calculations	**Cardiovascular Disease Cases**	Personal educational lectures using Data Show (PowerPoint) program	• Short examinations • Midterm examination • Final examination
١١	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
١٢	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
١٣	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
١٤	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

١٥	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
١	**Laboratory Information Management Systems (LIMS)**	2
٢	**Laboratory Automation**	2
3	**Digital Laboratory Technologies**	2
٤	**Data Analytics and Reporting**	2
٥	**Laboratory Compliance and Documentation**	2
٦	**Therapeutic Drug Monitoring**	2
٧	**Toxicology Laboratory Methods**	2
٨	**Emergency Laboratory Protocols**	2
٩	**Laboratory Troubleshooting**	2
١٠	**Laboratory Calculations and Problem-Solving**	2
١1	**Laboratory Workflow Optimization**	2
١2	**Laboratory Safety Management**	2
١3	**Laboratory Cost Management**	2
١4	**Laboratory Leadership and Communication**	2
15	**Pediatric Laboratory Testing**	2

42. Course evaluation

weekly examination
reports
Homeworks

43. 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- Diagnostic Helminthology

Course name
Diagnostic Helminthology
Course code
semester/ year
Spring semester
Date this description was prepared
February 2026
Available attendance forms
Fourth year students- Medical laboratory technologies
Number of study hours (total) / Number of units (total)
15 weeks
Name of the course administrator (if more than one name is mentioned)
Dr. MOHAMMED, Mohammed- Ass. lecturer Russel
objectives Course
• **At the end of this session, students should be able to:** • **Understand medically important helminthes including their life cycles, modes of transmissions, clinical features, diagnosis, treatment and prevention.** • **Describe blood, intestinal, liver and lung flukes.** • **Understand common round worms.** • **Understand different species of Cestodes.**
Teaching and learning strategies

Morphological Identification: Identify and differentiate major human helminths (nematodes, cestodes, trematodes) based on adult worms, eggs, larvae, or cysts in clinical samples.

Life Cycle Understanding: Analyze the parasite life cycle, including infective stages, intermediate hosts, transmission routes, and diagnostic stages in human specimens.

Microscopic Diagnosis: Develop proficiency in laboratory techniques, including direct fecal smears, concentration techniques, and special stains, to detect parasitic infections.

Clinical Interpretation: Interpret results of laboratory tests and associate them with clinical symptoms, patient history, and epidemiology.

Advanced Diagnostics: Introduce modern techniques (e.g., molecular methods, antibody detection) for identifying and managing complex parasitic diseases.

Prevention and Control: Propose effective strategies for controlling helminth infections and understand the public health implications of these diseases

argeted Skills and Competencies
Microscopy: Skilled identification of parasitic structures.

Lab Management: Understanding diagnostic protocols in various healthcare settings.

Data Analysis: Using clinical and laboratory data for patient management

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Quizzes, short a MCQs exam.s	PPT presentation	General Introduction Introduction; Parasites; Host; Zoonosis; Hostparasite Relationships; Cycle	mastering the tification, life es, and laboratory ction of sitic worms minths) in an clinical specimens. lents must be to perform microscopy, rpret laboratory lts, understand site biology epidemiology, apply appropriate	Top courses diagnostic helminthology, s as the LSH Laboratory Diagnosis Parasites (June 2025) and Ele Medical Helminthology Course, c intensive training morphological diagnosis, stool/blood analy microscopy, parasite life cyc These programs	1

			diagnostic niques (like l concentration) diagnose stinal, blood, tissue infections.	designed for technicians clinicians to impr infection management surveillance	
		Platyhelminth: General characters . Class cestoda: General characters . Teania saginata: Teania solium: Morphology & the adult warm and the larval stages of each species, biology, life cycle of each species, pathologinicity of each species, Lab . Diagnosis			2
		Hymenolepis nana, Hymenolepis diminuta. Diplidium caninum, Diphyllobathrium latum, Biology, morphology , .pathoginicity of e species, L Diagnosis			3
		Echinococcus granulosus. Echinocuccus multilocularis. Biology, life cycle, pathogenicity, medical importance of hydatid cyst disease Lab. Diagnosis,			

Commented [e1]:

		Class Trematoda: General characters . Genus Schistosoma. Species of human schistosoma, life cycle . .Schistosoma hematobium			5
		Schistosoma mansoni. Biology of adult worm, habitat, pathogenicity, Lab. diagnosis			6
		Fasciola hepatica Biology, life cy pathogenicity, l diagnosis			7
		Nemathelminthis. Clss Nemtoda, gen characters .			8
		Ascaris lambricoides Enterobius vermicularis . Biology of adult worm, life cycle, pathogenicity and medical importance of each species, L Diagnosis of e species .			9
		Trichuris trichura . Trichenala spiralis. Biology, life cycle, pathogenicity, medical importance of each species, Lab . Diagnosis of e species.			10
		Strogyloides stercoralis .			11

		Biology, life cycle, pathgenicity, medical importance, L Diagnosis			
		Ancylostoma duadenale ,Necator Americans (Hooks worm) Biology, life cycle, pathogenicity, medical importance of each species, Lab . .Diagnosis			12
		The filariae: Biology, pathogenicity and medical importance of each species, Lab . Diagnosis of e species			13
		Visceral larvae migrance, Cutaneaus larvae migrance			14
		Revision			

Course Evaluation

questionnaires, often electronic, designed to gather student feedback on instruction quality, course design, and learning experiences to drive improvements. They combine quantitative ratings and qualitative, open-ended comments to help instructors, administrators, and departments assess teaching effectiveness.

Learning and teaching resources

Medical Parasitology, DAVID T. JOHN, WILLIAM A. PETRI,. Medical Diagnostic Medical Parasitology Author(s): Lynne Shore Garcia M.S., MT, CLS, F(AAM), First published:15 December 2015 Print ISBN:9781555818999 |Online ISBN:9781683670889 |DOI:10.1128/9781555819002 Copyright © 2016 by ASM Press .	

Practical Guide to Diagnostic Parasitology Author(s):Lynne Shore Garcia First published:30 April 2021 Print ISBN:9781683670391 |Online ISBN:9781683673637 |DOI:10.1128/9781683673637 © 2021 Jo Wiley & Sons Ltd	
Parasitology, Eleventh edition, 2017. Ck Jayaram Paniker, Sougata Ghosh, Paniker 's Textbook of medical parasitology. Tenth edition, 2018.	

Course name
Clinical immunology
Course code
MLT 424
semester/ year
Spring Course / 2025-2026
Date this description was prepared
2-2-2026
Available attendance forms
My presence
(Number of units (total - units.) / Number of study hours (total)-h)
(Total units -4 units) /(Number of study hours –total -30).
Name of the course administrator (if more than one name is mentioned)
Professor doctor Tareq Jaffar faal aljanideel
objectives Course

Clinical immunology is the branch of medical science that studies the immune system in health and disease, focusing on the diagnosis, management, and prevention of immune-related disorders.

Aim of Clinical Immunology

The **aim** of clinical immunology is:

To understand, diagnose, treat, and prevent diseases that involve abnormalities of the immune system.

This includes conditions where the immune system is:

- Underactive (immunodeficiency)
- Overactive (hypersensitivity and allergies)
- Misguided (autoimmune diseases)
- Dysregulated in cancer or transplantation

Objectives:

To study immune mechanisms, diagnose disorders, treat patients, prevent disease, and advance immunological research.

Teaching and learning strategies

A. Teaching Methods: Sending PDF lectures, video clips, and a weekly live lecture.
1. Learning Methods: Homework, weekly quizzes, monthly reports, and a quiz bank for each lecture.
2. Assessment: A quiz bank for each lecture, monthly exams, and midterm and final exams.
B. Course-Specific Skills Objectives:
Study of laboratory diagnostic methods, blood preservation methods, serum separation and preservation, and reactions of various antigens and antibodies.

Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**RF test Anti-CCP te**	2	1
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3.Live lecture wee	Practical Clin Immunology	**ANA, Anti-dsDN Anti-sm test, C3 & level**	2	2
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology		2	3
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip Live lecture weekl	Practical Clin Immunology	**ANA, Anti-Ro, Anti-La, Rose Bengal, staining & Schirmer's test**	2	4
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**IgA & IgG AGA, I & IgG tTG & IgA IgG EMAs ICA, GADA, IA-2A or IAA test ANCA**	2	5
1. Oral (Weekl Examinations	1. PDF	Practical Clin Immunology	**Anti–Saccharomyces**	2	6

2. Writ (Monthly Termly) Examinations	2. Video clip Live lecture weekl		**cerevisiae antibody**		
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**ASMA, ANA, A actin, Anti-LK &Anti-SLA AMAs ANCA**	2	7
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology		2	8
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip Live lecture weekl	Practical Clin Immunology	**ASO titre, C3 & level IgA level**	2	9
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**IgE leve**	2	10
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip Live lecture weekl	Practical Clin Immunology	**Skin prick test**	2	11
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**Direct & indir Coombs test**	2	12
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**IgE level & skin pa testing**	2	13
1. Oral (Weekl Examinations 2. Writ (Monthly	1. PDF 2. Video clip	Practical Clin Immunology	**Anti-TSH-R (T TBII),TGI, Anti-T & anti-Tg test**	2	14

Termly) Examinations	3. Live lecture weekly				
1. Oral (Weekl Examinations 2. Writ (Monthly Termly) Examinations	1. PDF 2. Video clip 3. Live lecture weekly	Practical Clin Immunology	**Tumor antigens**	2	15

Course Evaluation
Student participation in the lecture involves directing questions to students and presenting important ideas for discussion to assess students' level and understanding. 1. Oral (weekly) exams 2. Written (monthly and termly) exams

Learning and teaching resources	
Kuby immunology 7th Edition 2013	
Basic immunology 2004	
Practical immunology fourth addition 2002. Hud and hat	