

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



Academic Program and Course Description Guide

2025–2026

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Academic Program Description Form

University Name: AL-FURAT AL-AWSAT TECHNICAL UNIVERSITY

Faculty/Institute: KUFA INSTITUTE

Scientific Department: MEDICAL LABORATORY TECHNIQUES

DEPARTMENT


Academic or Professional Program Name: Technical Diploma

Final Certificate Name: Technical Diploma

Academic System: Course

Description Preparation Date: 15/9/2025


File Completion Date: 17/9/2025

Signature: 

Head of Department Name:

Assist Prof. Dr. Angham Najah Hadi

Date: 15 /9/2025

Signature: 

Scientific Associate:

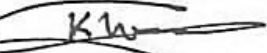
Assist Prof. Dr. Ayad Muslim

Date: 15 /9/2025

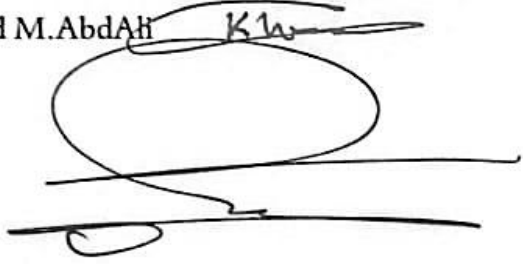
The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Chief Engineer: Khulood M. AbdAlh 

Date: 15/9/2025

Signature: 

Approval of the Dean

Prof. Dr. Atheer Kadhim Ibadi

15 /9/2025

4. Program Accreditation

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

The program submitted an application for accreditation for the last academic year, 2023–2024, but did not receive accreditation. The department was provided with feedback from the Academic Accreditation Council for Health and Medical Technology Colleges regarding the reasons for the accreditation not being granted

5. Other external influences

Is there a sponsor for the program?

Non.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	5	16	%11.3	
College Requirements	3	7	%5.0	
Department Requirements	23	119	%83.8	
Summer Training	2 months	–	–	
Other				

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

7. first Year Program Description (First Semester + Second Semester)

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First Stage / First Semester				
	MLT111-50-C	Laboratory Techniques	٢	4
	MLT112-50-C	Microbial Preparations	٢	3
	MLT113-50-C	Laboratory instrument	٢	2
	MLT114-50-C	Histology	٢	3
	MLT115-50-C	Analytical Chemistry	٢	4
	MLT116-50-C	Fundamentals of Nursing	١	2
	ATU10C	Computer Applications	١	1
	ATU13C	Human Rights and Democracy	٢	-
First Stage / second Semester	MLT121-50-C	Quality Control	2	4
	MLT122-50-C	Histological techniques	2	3
	MLT123-50-C	Molecular Biology	2	2
	MLT124-50-C	Laboratory Safety	1	2
	MLT125-50-C	Blood Transfusion	1	2
	MLT126-50-C	Biochemistry	2	4
	ATU11C	English Language	2	-
	ATU12C	Arabic Language	2	-

Second Year Program Description (First Semester + Second Semester)

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
second Stage / First Semester				
	MLT211-50-C	Microbiology	٢	4
	MLT212-50-C	Hematology 1	٢	4
	MLT213-50-C	Clinical Chemistry 1	٢	4
	MLT214-50-C	Immunology	٢	4
	MLT215-50-C	Protozoa	٢	4
	MLT216-50-C	Virology	١	2
	MLT217-50-C	Medical Ethics	٢	-
	ATU24C	Crimes of the Ba'ath Regime	٢	-
second Stage / second Semester	ATU22C	Pathogenic Bacteria	2	4
	MLT221-50-C	Hematology 2	2	4
	MLT222-50-C	Clinical Chemistry 2	2	4
	MLT223-50-C	Immunology	2	4
	MLT224-50-C	Helminthes	2	4
	MLT225-50-C	Medical Mycology	1	2
	MLT226-50-C	Arabic Language	2	-----
	ATU20C	English Language	2	-----
	ATU21C	Computer Applications	1	1
	ATU25C	Graduation Project	-----	2

8. Expected learning outcomes of the program

Knowledge	
Cognitive Objectives	Knowledge and Understanding <ol style="list-style-type: none">1- Clarify the basic concepts of working in medical laboratories.2- Acquire skills in addressing problems and obstacles encountered in laboratory work.3- Gain fundamental skills for working in pathological analyses.4- Learn how to write medical reports.
Skills	
Skill Objectives	Learning Outcomes 2 <ol style="list-style-type: none">1- Ability to prepare culture media and chemical reagents for diagnosing causative agents.2- Writing reports of microscopic observation results.3- Ability to diagnose the causes of infections.
Ethics	
Ethics	Quizzes Midterm and Final Exams for Practical and Theoretical Subjects Interaction within the Lecture Hall Reports Graduation Projects Summer Training

9. Teaching and Learning Strategies

Through delivering theoretical and practical lectures and conducting scientific

experiments to teach these skills over two consecutive years on a daily, weekly, and monthly basis. Developing curricula consistent with approved international standards, and sending students for training in teaching hospitals to gain real-world experience.

10. Evaluation methods

Implemented across all stages of the program in general.

Student evaluation within the classroom is based on daily attendance, student interaction with lectures and class discussions, student self-conduct, daily exams, and midterm and final exams. This also includes participation grades for discussion questions on academic topics and grades for homework assignments.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor	Biology	Clinical Immunology			✓	
	Biology	Physiology			✓	
	Biology	(Biology)			✓	
	Biology	Histology			✓	
Lecturer	Chemistry	Biochemistry			✓	
	Biology	Parasitology			✓	
	Biology	Molecular Genetics			✓	
	Chemistry	Biochemistry			✓	
	Medical microbiology	Immunology			✓	
	Biology	Parasitology				
Assistant Lecturer	Pathological analyses	Molecular biology			✓	
	Chemistry	Biochemistry			✓	
	Biology	Histology			✓	
	Biology	Microbiology			✓	
	Biology	botany			✓	

Professional Development

Mentoring new faculty members

Through organizing introductory and skills-based courses for new hires (315 contracts + Federal Service Council).

Professional development of faculty members

Involving staff in advanced courses such as teaching methods, administrative skills, and

legal skills courses.

1. Acceptance Criterion

Admission is determined by the regulations set by the Ministry of Higher Education through centralized admission, the admission policies approved by the university and college, and the student's preference for applying to the department. The student must be a graduate of the scientific branch of high school exclusively, or its equivalent.

2. The most important sources of information about the program

Textbooks, professors' lectures, scientific kits, scientific research and theses, the internet, the central library at the institute, and experiences of Arab and international universities.

3. Program Development Plan

Adding global scientific updates and keeping pace with modern developments in the field of medical laboratories by involving instructors in advanced specialized courses.

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	
First Stage / First Semester	MLT111-50-C	Laboratory Techniques	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT112-50-C	Microbial Preparations	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT113-50-C	Laboratory instrument	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT114-50-C	Histology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT115-50-C	Analytical Chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT116-50-C	Fundamentals of Nursing	Ancillary	*	*	*	*	*	*	*	*	*	*	*	*	*
	ATU12C	Computer Applications	Ancillary			*								*	*	
	ATU13C	Human Rights and Democracy	Ancillary	*	*	*	*	*	*	*	*	*	*	*	*	*
First Stage / second Semester	MLT121-50-C	Quality Control	Basic	*	*	*	*	*	*	*	*	*	*	*	*	
	MLT122-50-C	Tissue Slides	Basic	*	*	*	*	*	*	*	*	*	*	*	*	
	MLT123-50-C	Molecular Biology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	
	MLT124-50-C	Laboratory Safety	Basic	*	*	*	*	*	*	*	*	*	*	*	*	
	MLT125-50-C	Blood Transfusion	Basic	*	*	*	*	*	*	*	*	*	*	*	*	

	MLT126-50-C	Biochemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	ATU10C	English Language	Ancillary			*	*	*	*			*		*	*

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	
Second Stage / First Semester	MLT211-50-C	Microbiology	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT212-50-C	Hematology 1	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT213-50-C	Clinical Chemistry 1	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT214-50-C	Immunology	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT215-50-C	protozoa	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT216-50-C	Virology	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT217-50-C	medical Ethics	Ancillary	*	*			*	*	*	*	*			*	
	ATU24C	Crimes of the Ba'ath Regime	basic	*	*	*	*			*	*	*	*	*	*	
second Stage / second Semester	MLT221-50-C	Bacterial pathogenicity	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT222-50-C	Hematology 2	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT223-50-C	Clinical Chemistry 2	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT224-50-C	Clinical Immunology	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT225-50-C	Helminthes	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	MLT226-50-C	Medical Mycology	basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	ATU20C	English Language	Ancillary			*	*	*	*			*		*	*	

ATU21C	Arabic Language	Ancillary			*	*	*	*			*		*	*
ATU22C	Computer Applications	Ancillary			*							*	*	
ATU25C	graduation Project	basic												

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

Course Description Form- First Year, First Semester

1. Course Name:	
Laboratory Techniques	
2. Course Code:	
MLT111-50-C	
3. Semester / Year:	
2020-2021, First Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours/semester, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Rusul Arif Abd Ali Email: rusul.shallan@atu.edu.iq	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none">1- By the end of the course, students will be proficient in the fundamentals of laboratory techniques and testing methods, aiming for the most accurate results. Students will also be introduced to these concepts by the end of the course.2- Students will understand sterilization methods and their importance in preventing contamination and diseases.3- Students will gain a simplified understanding of microbiology and learn methods for preparing culture media, culturing microorganisms, and sterilizing them.4- Students will understand urinalysis and its importance in diagnosing kidney and other bodily diseases.5- Students will learn about stool testing and its importance in detecting gastrointestinal diseases and parasites.
9. Teaching and Learning Strategies	

Strategy	<ol style="list-style-type: none"> 1- Explanation and clarification through lectures. 2- Presentation of scientific materials using data shows and display screens. 3- Self-learning through preparing reports on pathological cases in laboratories. 4- Providing students with the fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems 5- Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals.
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	
Main references (sources)	Henry's Clinical Diagnosis and Management by Laboratory Methods
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Pubmed, Google scholar, Researchgate

12. Course Structure: Laboratory Techniques – Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	(2)Theoretical		<p>Introduction to Medical Lab. Techniques includes</p> <ul style="list-style-type: none"> - Identify the various laboratory glasses and how to deal with laboratory methods. - Sterilization. Identify ways of cleaning, sterilization, and disinfection by physical, chemical, and mechanical means. Identify different sterilization equipment and materials used in chemical sterilization. <p>A full review of the basic techniques used in the diagnosis of bacteria, blood, and clinical chemistry.</p> <ul style="list-style-type: none"> - Laboratory safety and how to avoid accidents and errors that are inadvertently laboratory in a laboratory (first aid, biochemical hazards, and biological hazards), and biological and chemical safety. 	Lecture	Student questioning or assessment
4	(2)Theoretical		<p>Samples collection and handling.</p> <ul style="list-style-type: none"> - Samples collection for different lab. Investigations, samples transport, samples preparation. 	Lecture	Student questioning or assessment
5	(2)Theoretical		<p>Culturing of microorganism :- types of Culture media, different samples used for culture, bacterial growth curve, MO characterization (chemical tests for MO identification)</p>	Lecture	Student questioning or assessment
6	(2)Theoretical		<p>Urine samples: Urine formation, Properties of urine, chemical and physical investigations, microscopic examination.</p>	Lecture	Student questioning or assessment
7	(2)Theoretical		<p>Stool sample: formation, properties, culture, general examination.</p>	Lecture	Student questioning or assessment
8	(2)Theoretical		<p>Seminal Fluid: Formation, organs of reproductive tract, characterization of semen fluid, investigations that used on seminal fluid, seminal fluid examination, fructose test, antisperm antibody (serum and semen). Total sperm count in Neubauer chamber. Types of normal and abnormal of Sperms character with study the way of writing the final report.</p>	Lecture	Student questioning or assessment
9	(2)Theoretical		<p>Agglutination techniques</p>	Lecture	Student questioning or assessment
10	(2)Theoretical		<p>Advanced techniques -Enzyme-linked immunosorbent assay (ELISA) principle, applications</p>	Lecture	Student questioning or assessment
11	(2)Theoretical		<p>Radioimmunoassay (RIA) principle, applications</p>	Lecture	Student questioning or assessment
12	(2)Theoretical		<p>Immunofluorescence technique</p>	Lecture	Student questioning or assessment
13	(2)Theoretical		<p>Polymerase chain reaction (PCR), types principle, applications</p>	Lecture	Student questioning or assessment
14	(2)Theoretical		<p>Real-time PCR</p>	Lecture	Student questioning or assessment
15	(2)Theoretical		<p>Review</p>	Lecture	Student questioning or assessment

Course Structure: Laboratory Techniques – Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
3 - 1	(4) Practical		Introduction on the subject of medical laboratory techniques. - Glassware and materials used in some tests. Disinfection and sterilization (Chemical and physical) - biological and chemical hazards and safety	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
4	(4) Practical		Samples collection and handling. - Samples collection for different lab. Investigations, samples transport, samples preparation	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
5	(4) Practical		Culturing of microorganism :- types of Culture media, preparation of culture media	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
6	(4) Practical		Urine samples: Chemical and physical investigations, microscopic examination. Culture and sensitivity	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
7	(4) Practical		Stool sample: General examination. Culture and sensitivity	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
8	(4) Practical		Seminal Fluid: Seminal fluid examination Liquification time, physical examination, microscopic examination. Fructose test.	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
9	(4) Practical		Heamagglutination test	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
10	(4) Practical		Advance techniques -Enzyme-linked immunosorbent assay (ELISA) procedure, troubleshoot. Cutoff value, standard curve	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
11	(4) Practical		Radioimmunoassay (RIA) procedure, troubleshoot.	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
12	(4) Practical		Immunofluorescence technique	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
13	(4) Practical		Polymerase chain reaction (PCR), types procedure, gel electrophoresis	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
14	(4) Practical		Real-time PCR, procedure application in medical lab.	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture
15	(4) Practical		Review	Practical Lab Tests	Daily Quizzes, Midterm Exams, Reports after each lecture

1. Course Name:

Laboratory instrument

2. Course Code:

MLT113-50-C

3. Semester / Year:

202^o-202^o, First Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

90 hours/semester, 4 credits

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

Name: Lec. Dr Lect. Taif Razzaq Majjed Hasson

Email: taif.najjar@atu.edu.iq

8. Course Objectives

Course Objectives

This section outlines strategies for familiarizing students with how laboratory equipment works, how to maintain it, and how to preserve it.

9. Teaching and Learning Strategies

Strategy

- Explanation and clarification through lectures.
- Presentation of scientific materials using data shows and display screens.
- Self-learning through preparing reports on pathological cases laboratories.
- Providing students with the fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.
- Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25%

practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books any)	
Main references (sources)	Book Introduction to Medical laboratory Technology By F. J. Baker and R.E. Silverton Butter worths. 2. Binding practical Practical Medical Technology By M.D.A 1986
Recommended books and references (scientific journals, reports...)	Pathological Analysis Ashour Al-Nuaimi(Al-Wajeez fi Al-Tahleelat Maradeyah)
Electronic References, Websites	Pubmed, Google scholer, Researchgate, Science direct

12. Course Structure: Laboratory instrument– Theoretical and Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical, (2)Practical	Definition of microscope, its types, parts, and principle of operation.	MICROSCOPES Uses, main parts ,principle of work ,kinds, types of condensers, operation, cleaning, service and maintenance.	Lecture	Questioning or testing students as needed
2	(2)Theoretical, (2)Practical	Definition of balance (scale), its types, parts, and principle of operation.	BALANCES Uses ,types of balances ,main part ,principle of operation ,operation ,service and maintenance .	Lecture	Questioning or testing students as needed
3	(2)Theoretical,(2)Practical	Definition of spectrophotometer, its types, parts, and principle of operation.	PHOTOMETRY Introduction, Light and wave length, Beer lamberts Law, types of photometers, main parts, filters, prisms and diffraction gratings, principle of operation, operation and maintenance.	Lecture	Questioning or testing students as needed
4	(2)Theoretical,(2)Practical	Definition of flame photometer, its types, parts, and principle of operation.	FLAME PHOTOMETRY Introduction , Uses ,main parts , types , atomizers ,principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed
5	(2)Theoretical,(2)Practical	Definition of atomic absorption spectrophotometer, its types, parts, and principle of operation.	ATOMIC ABSORPTION SPECTROPHOTOMETRY Introduction ,uses , types, main parts , principle of operation ,operation and maintenance	Lecture	Questioning or testing students as needed
6	(2)Theoretical,(2)Practical	Definition of centrifuge, its types, parts, and principle of operation.	CENTRIFUGES Uses , types, main parts , principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed
7	(2)Theoretical,(2)Practical	Definition of sterilizer, its types, parts, and principle of operation.	AUTOCLAVES Introduction ,uses , types, main parts , principle of operation , sterilization, operation and maintenance	Lecture	Questioning or testing students as needed
8	(2)Theoretical,(2)Practical	Definition of pH meter, its types, parts, and principle of operation.	PH METERS Uses , types, main parts ,electrodes , principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed
9	(2)Theoretical,(2)Practical	Definition of microtome (tissue sectioner), its types, parts, and principle of operation.	MICROTOMES Uses , types, main parts ,sharpeners , principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed

10	(2)Theoretical,(2)Practical	Definition of electrophoresis apparatus, its types, parts, and principle of operation.	ELECTROPHORESIS Uses , types, main parts , principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed
11	(2)Theoretical,(2)Practical	Definition of water bath and oven, their types, parts, and principles of operation for each.	HEATING INSTRUMENTS (WATER BATHS ,OVEN & INCUBATION) Uses , types, main parts thermostats, principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed
12	(2)Theoretical,(2)Practical	Distillation apparatus, its types, parts, and operating procedure.	WATER PURIFICATION (DISTILLATORS & DEAIIONIZERS) Distillator ,deionizers, uses, main parts , operation and maintenance.	Lecture	Questioning or testing students as needed
13	(2)Theoretical,(2)Practical	Auto-analyzer, its types, uses, and principle of operation.	AUTOANALYZERS Introduction ,uses , types, main parts , principle of operation ,operation and maintenance.	Lecture	Questioning or testing students as needed
14	(2)Theoretical,(2)Practical	Review of all previous topics.	Review	Lecture	Questioning or testing students as needed
15	(2)Theoretical,(2)Practical	Exam covering all previous lectures.	Final exam	Lecture	Questioning or testing students as needed

1. Course Name:	
Microbial Preparation	
2. Course Code:	
MLT112-50-C	
3. Semester / Year:	
202 ^o -202 ^l , First Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours/semester, 5 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst. Lect. Noor Hasan Naser Hussein	
Email: noor.hassan.iku@atu.edu.iq	
8. Course Objectives	
Course Objectives	To prepare cadres capable of working in histopathology laboratories and preparing samples for clinical examinations to detect cancerous diseases.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> -Explanation and clarification through lectures. -Scientific materials are presented using data show projectors and display screens. -Self-learning through preparing reports in disease case laboratories. -Providing students with basics and additional topics related to previous learning outcomes for skills, to solve practical problems. -Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals.
10. Course Evaluation	
Grades are distributed out of 100 based on assigned student tasks such as daily preparation,	

daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books any)	
Main references (sources)	Book of Light Microscopic Preparations - Theory and Application
Recommended books and references (scientific journals, reports...)	Bancroft, J. and Stevens, A. Theory and Practice of Histology Techniques. Churchill Livingstone, London. 2002.
Electronic References, Websites	

12. Course Structure: Microbial Preparation– Theoretical and Practical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical,(3)Practical	Definition of histological terms.	Definition of some terminology that deals with histology , cytology,... etc.	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
2	(2)Theoretical,(3)Practical	Collection of biopsy (live) samples and post-mortem (autopsy) specimens.	Sample collection, biopsy, and autopsy.	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
3,4	(2)Theoretical,(3)Practical	Steps of tissue preparation: fixation and fixatives.	Steps of preparing tissue for study, fixation, fixatives.	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
5,6	(2)Theoretical,(3)Practical	Routine fixation and special fixation.	Routine fixatives and special fixatives.	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
7	(2)Theoretical,(3)Practical	Washing solutions and washing time.	Washing, solution , time .	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
8	(2)Theoretical,(3)Practical	Dehydration and dehydrating agents.	Dehydration , dehydrants .	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
9	(2)Theoretical,(3)Practical	Clearing and types of clearing agents.	Clearing ,clearing agents	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
10	(2)Theoretical,(3)Practical	Impregnation and types of wax.	Infiltration ,types of waxes .	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
11	(2)Theoretical,(3)Practical	Embedding and trimming.	blocking and trimming .	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
12	(2)Theoretical,(3)Practical	Microtome and sectioning.	Microtomes, Sectioning.	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
13,14	(2)Theoretical,(3)Practical		Review	Theoretical lecture using PowerPoint	Quizzes,Mid-term Exams (or Sessional Exams), Final Exams
15			Final exam		

1. Course Name:	
Histology	
2. Course Code:	
MLT114-50-C	
3. Semester / Year:	
202 ^o -202 ^ᶓ , First Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours/first semester, 5 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Lec. Noor Ibrahim Abdulzahra	
Email: kin.nor3@atu.edu.iq	
8. Course Objectives	
Course Objectives	This course aims to qualify students with comprehensive knowledge of histology and histological examinations. It focuses on equipping them to solve medical and scientific problems related to histopathology. The ultimate goal is to graduate technical staff capable of working in both government and private medical laboratories.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> - Explanations and clarifications are provided through lectures. - Scientific materials are presented using data show projectors and display screens. - Students engage in self-directed learning by preparing reports in disease case laboratories. - Students are equipped with foundational principles and additional topics related to previous learning outcomes for skills, to solve practical problems. - Theoretical subjects are applied practically in various laboratories affiliated with teaching hospitals.
10. Course Evaluation	

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books any)	Basic histology Atlas and text of histology
Main references (sources)	TEXT book of HISTOLOGY Atlas of histology
Recommended books and references (scientific journals, reports...)	Practical Histology Junqueira's basic histology
Electronic References, Websites	HISTOLOGY GUIDE HISTOLOGY WORLD

12. Course Structure: Histology– Theoretical and Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical,(3)Practical	The student becomes familiar with.	Shape of cell	Theoretical	Quizz +Attendance.
2	(2)Theoretical,(3)Practical	The student understands the topic	Epithelial tissue –simple epith. T.	Theoretical	Quizz +Attendance.
3	(2)Theoretical,(3)Practical	The student understands the topic	Epithelial tissue- Stratified epith. T.	Theoretical	Quizz +Attendance.
4	(2)Theoretical,(3)Practical	The student understands the topic	Connective tissue – Loose co. t.	Theoretical	Quizz +Attendance.
5	(2)Theoretical,(3)Practical	The student understands the topic	Connective tissue –dense co. t.	Theoretical	Quizz +Attendance.
6	(2)Theoretical,(3)Practical	The student understands the topic	Connective tissue –the blood	Theoretical	Quizz +Attendance.
7	(2)Theoretical,(3)Practical	The student understands the topic	Connective tissue – compact bone	Theoretical	Quizz +Attendance.
8	(2)Theoretical,(3)Practical	The student understands the topic	External feature of digestive system	Theoretical	Quizz +Attendance.
9	(2)Theoretical,(3)Practical	The student understands the topic	Urogenital system of male &female	Theoretical	Quizz +Attendance.
10	(2)Theoretical,(3)Practical	The student understands the topic	Liver	Theoretical	Quizz +Attendance.
11	(2)Theoretical,(3)Practical	The student understands the topic	Spleen	Theoretical	Quizz +Attendance.
12	(2)Theoretical,(3)Practical	The student understands the topic	Lymph node	Theoretical	Quizz +Attendance.
13	(2)Theoretical,(3)Practical	The student understands the topic	Circulatory system (Artery)	Theoretical	Quizz +Attendance.
14	(2)Theoretical,(3)Practical	The student understands the topic	Circulatory system (vein)	Theoretical	Quizz +Attendance.
15			Final exam		

1. Course Name:	
Analytical chemistry	
2. Course Code:	
MLT115-50-C	
3. Semester / Year:	
202 ^o -202 ¹ , First Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours/first semester, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Douaa Abdulhussain Kadhum	
Email: Douaa.kadhum@atu.edu.iq	
8. Course Objectives	
Course Objectives	By the end of the first semester, the student will have benefited from the Analytical Chemistry course by gaining knowledge in the atom and its components, knowing matter and its types, and the law of conservation of mass and energy. The student benefited from qualitative diagnostic methods, titration methods, weight measurement, acidity measurement, types of precipitates, and solution preparation. He benefited from analytical chemistry in knowing the chemical tools and equipment available in the laboratory.
9. Teaching and Learning Strategies	
Strategy	-Explanation and clarification through lectures. Displaying scientific materials using data show devices and a display screen. Self-learning by preparing reports in clinical pathology laboratories. Providing students with the basics and additional topics related to previous learning outcomes for skills, to solve practical problems. Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals.
10. Course Evaluation	

12. Course Structure: analytical chemistry– Theoretical and Practical

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Analytical Chemistry book
Main references (sources)	Skoog analytical chemistry, Gary analytical chemistry
Recommended books and references (scientific journals, reports...)	Analytical Chemistry Journal, Analytical Methods
Electronic References, Websites	Science direct and Google scholar

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical,(€)Practical	Introduction to Analytical Chemistry	Introduction to analytical chemistry Atom , elements, radio isomers, pollution with radio isomers , pollution with elements Relation between atoms, molecules ,energy, according to the new theory of atom.(Debroley equation). Matter , classification.	Theoretical	Quiz
2	(2)Theoretical,(€)Practical	Types of Bonds – Qualitative and Quantitative Analysis Methods	Chemical bonds, covalent ,Ionic , coordination , hydrogen. Methods of analysis . qualitative and quantitative ,statistical methods of quantitative analysis, errors in quantitative analysis	Theoretical	Quiz
3	(2)Theoretical,(€)Practical	Ways to Express Concentration – Solutions	Methods of expressing concentration of solution , Molar solution ,normal solution Preparation of molar solution , dilution ,questions	Theoretical	Quiz
4	(2)Theoretical,(€)Practical	Chemical Equilibrium	Percentage composition, part per million. Chemical equilibrium, ionization, constant of water (PH and POH).	Theoretical	Quiz
5	(2)Theoretical,(€)Practical	Ionization of Weak Electrolytes	Ionization of weak electrolyte . calculation of PH of weak acids and weak bases. Buffer solutions , classification	Theoretical	Quiz
6	(2)Theoretical,(€)Practical	Buffer Solutions	Calculation of buffer solutions Uses of buffer solutions.	Theoretical	Quiz
7	(2)Theoretical,(€)Practical	Classification of Volumetric Analysis	Volumetric analysis , classification , standard solution , examples Neutralization reactions .	Theoretical	Quiz
8	(2)Theoretical,(€)Practical	Redox Reactions (Oxidation-Reduction Reactions)	Oxidation ,reduction reactions . examples Precipitation reactions.	Theoretical	Quiz
9	(2)Theoretical,(€)Practical	Indicator – Its Theory – Properties – Reactions	Theory of indicators , reaction , properties ,examples , reaction , properties ,examples. Types of indicators	Theoretical	Quiz
10	(2)Theoretical,(€)Practical	Principle of Colorimetry	Principles of colorimetry .	Theoretical	Quiz
11	(2)Theoretical,(€)Practical	Beer-Lambert Law	Beer-lambert law .	Theoretical	Quiz
12	(2)Theoretical,(€)Practical	Standard Solutions	Standard solution/calibration curve.	Theoretical	Quiz
13	(2)Theoretical,(€)Practical	Colorimetric Measurement Devices	Instruments of colorimetry.	Theoretical	Quiz
14			Final exam		
15			Final exam		

1. Course Name:	
Fundamentals Of Nursing.	
2. Course Code:	
MLT116-50-C	
3. Semester / Year:	
202 ^o -202 ¹ , First Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
≈5 hours/first semester, 3 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst. Lect. Mohammed Hussein Obaid Abbas (External Lecturer)	
Email elabedi94@gmail.com	
8. Course Objectives	
Course Objectives	Students will be able to acquire knowledge, skills, and general practices related to the fundamentals of nursing.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> -Explanations and clarifications provided through lectures. Audiovisual Presentations: Displaying scientific materials using data projectors and screens. -Preparing reports in clinical pathology laboratories. - Equipping students with foundational and supplementary topics related to prior learning outcomes and skills to tackle practical problems. - Applying theoretically studied topics in real-world settings within various laboratories associated with teaching hospitals.
10. Course Evaluation	
Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).	
11. Learning and Teaching Resources	

Required textbooks (curricular books any)	
Main references (sources)	Kozier & Erb's Fundamentals of Nursing Skills in Clinical Nursing Bates' Nursing Guide to Physical Examination and History Taking. ... First Aid Manual. ...
Recommended books and references (scientific journals, reports...)	Brunner & Suddarth's Textbook of Medical-Surgical Nursing Nursing Care Plans: Transitional Patient & Family Centered Care (Nursing Care Plans and Documentation)
Electronic References, Websites	

12. Course Structure: fundamentals of nursing – Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(1)Theoretical	Definition of Terminology	Introduction to nursing	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
2	(1)Theoretical		Medical examination	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
3	(1)Theoretical	Identifying and Measuring Vital Signs	Vital signs, temperature measurement,	Theoretical lectures using the the PowerPoint program.	Quizzes, midterm exams, and final exams
4	(1)Theoretical	Methods of Pulse Measurement	Pulse, definition, factors that effecting pulse, measurement of pulse .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
5	(1)Theoretical	Method for Performing Respiration on a Patient	Respiration, definition, factors that effecting respiration, measurement of respiration	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
6	(1)Theoretical	Measuring Blood Pressure	Blood pressure, definition, factor the effecting blood pressure, hyper and hypotension, measurement of blood pressure	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
7	(1)Theoretical	Definition of Public Health Terminology	Health care, definition, factors effecting health care	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
8	(1)Theoretical		Factors that effects the health of worker in laboratories, natural factors, infectious diseases	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
9	(1)Theoretical		Chemical factors- disease	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
10	(1)Theoretical		Psychological factors-diseases	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
11-12	(1)Theoretical		Biological factors- types-their effects on workers in Lab.- diseases.	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
13-14	(1)Theoretical	First Aid	First aid- definition, paramedic, fundamental of first aid, wound, bleeding .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
15	(1)Theoretical	Burns and Types of Fractures	Burn-types of fracture aid-artificial respiration	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams

Course Structure: fundamentals of nursing – Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2) Practical	Physical and Medical Examination	Physical and medical examination	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
2	(2) Practical	Methods of Measuring Vital Signs	Methods of bio-vital markers measurement-temperature measurement	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
3	(2) Practical	Pulse Measurement	Pulse measurement, atrial, vein pulsation	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
4	(2) Practical	Respiration Methods	Respiration measurement	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
5	(2) Practical	Methods of Measuring Blood Pressure	Method of blood pressure measurement	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
6	(2) Practical	Review Lecture on Measuring Vital Signs	Review for bio-vital markers measurement	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
7	(2) Practical	Sterilization Methods	Disinfection and sterilization methods	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
8	(2) Practical	Medication Dispensing Methods	Methods of drugs intake and needle glaucoma	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
9	(2) Practical	Specimen Collection Methods	Samples collection from patients	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
10	(2) Practical	Patient Blood Collection	Blood collection	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
11	(2) Practical		Review	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
12	(2) Practical	First Aid - Wounds - Bleeding	First aid- wound and bleeding first aid. .	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
13	(2) Practical	First Aid - Fractures	First aid- fractures first aid- poisoning	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
14	(2) Practical	First Aid	Choking first aid- Heart massage	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams
15	(2) Practical		Application of artificial respiration	Practical demonstration on mannequins	Quizzes, midterm exams, and final exams

1. Course Name:	
Computer applications	
2. Course Code:	
ATU12C	
3. Semester / Year:	
202 ^o -202 ^l , First Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/first semester, 3 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Hassanein Haider (External Lecturer)	
Email hasanain.hayder@jmu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> - Students will be able to acquire practical skills and the ability to operate a computer. - Identify computer hardware and software components. - Understand different types of operating systems and their features. -Gain knowledge of operating the Windows operating system, including mouse button usage, keyboard operation, identifying desktop components and icons, interacting with windows, creating files and documents, and shutting down the computer. - Acquire skills in using Microsoft Office programs (Word, Excel, PowerPoint). - Understand concepts related to computer networks, the internet, web browsers, and search engines. -Gain experience in creating email accounts and sending/receiving email messages. -Understand the concept of cloud computing and Google Cloud applications.

9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> - Explanation and clarification of concepts through lectures. - Displaying scientific materials using data projectors and screens. - Preparing reports in clinical pathology laboratories. - Providing students with fundamental and additional topics related to previous learning outcomes for skills, to solve practical problems. - Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals.
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books if any)	There is no textbook
Main references (sources)	<ul style="list-style-type: none"> • Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020). • Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology in Action Complete", 16th Edition (2020). • Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert. • Al-Khader Ali Al-Khader Bahath, "Fundamentals of Computer," 2016. • Ziyad, Ghassan, et al., "Fundamentals of Computer and Office Applications, Parts: One, Two, Three, Four," 2014.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Coursera ,Udemy https://support.microsoft.com/ar-sa/windows

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> - Hardware and Software Concepts and their components. - The concept of Computing. - Data and Information. - Information Applications. - Connecting Input/Output Devices. - Peripheral Devices to the Central Processing Unit (CPU). 	Introduction to Computer.	Theoretical explanation supported by presentations and practical application	Daily/oral/ written exams and discussions
2	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> -Computer Parts - Device Components - Input/Output (I/O) Units - Types of Memory: <ul style="list-style-type: none"> • Volatile Memory • Non-Volatile Memory 	Computer Components	Theoretical explanation supported by presentations and practical application	Daily/oral/ written exams and discussions
3	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> -Central Processing Unit (CPU) Components: <ul style="list-style-type: none"> Control Unit (CU) Arithmetic Logic Unit (ALU) - Computer Ports -Personal Computer -Types of Computers - Computer Features 	Computer Components	Theoretical explanation supported by presentations and practical application	Daily/oral/ written exams and discussions
4	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> - Operating System - Fundamentals of Common Operating Systems: <ul style="list-style-type: none"> • Windows Operating System • Mac Operating System • Linux Operating System • Unix Operating System - Graphical User Interface (GUI) - Using Mouse Techniques 	Operating System and Graphical User Interface (GUI)	Theoretical explanation supported by presentations and practical application	Daily/oral/ written exams and discussions
5	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> • Using Common Symbols on the Keyboard • Status Bar • Using and Selecting the Start Menu • Concept of Folders and Directories • Opening and Closing Different Windows • Creating Shortcuts 	Operating System and Graphical User Interface (GUI)	Theoretical explanation supported by presentations and practical application	Daily/oral/ written exams and discussions
6	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> • Basics of Word Processing • Key Features of Word Processors • Opening and Closing Documents • Creating and Editing Text • Formatting Text and Paragraphs • Using Templates to Create Documents 	Word Processing	Theoretical explanation supported by presentations and practical application	Daily/oral/ written exams and discussions
7	(1)Theoretical	- Creating and Managing Tables	Word	Theoretical	Daily/oral/

	(1)Practical	<ul style="list-style-type: none"> - Using Styles and Themes - Spelling and Grammar Check Tools -Using Headers and Footers 	Processing	explanation supported by presentations and practical application	written exams and discussions
8	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> -Introduction to Spreadsheet Software (Microsoft Excel) - Creating and Formatting Worksheets - Sorting and Filtering Data - Using Formulas and Functions 	Spread Sheet (Microsoft Excel)	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
9	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> - Using Formulas and Functions - Using PivotTables for Data Analysis - Data Validation - Data Visualization: <ul style="list-style-type: none"> • Creating Charts • Graphs 	Spread Sheet (Microsoft Excel)	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
10	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> - Introduction to Presentation Software (Microsoft PowerPoint) - Overview of Common Presentation Tools - Creating a New Presentation -Using Templates and Themes - Inserting and Formatting Text and Images - Transition Effects and Animations 	Presentation Software (Microsoft PowerPoint)	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
11	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> - Using Speaker Notes and Timers - Advanced Features: <ul style="list-style-type: none"> • Hyperlinks • Action Buttons -Troubleshooting Common Presentation Issues - Future Trends in Presentation Technology 	Presentation Software (Microsoft PowerPoint)	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
12	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> - Fundamentals of Computer Networks -LAN (Local Area Network) -MAN (Metropolitan Area Network) - WAN (Wide Area Network) -Concept of the Internet - Internet Applications -Internet Connection 	Introduction to Internet and Web Browsers	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
13	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> • World Wide Web (WWW) • Web Browse Software (Browsers) • Search Engines • Understanding URL (Uniform Resource Locator) • Domain Name • IP Address 	Introduction to Internet and Web Browsers	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
14	(1)Theoretical ,(1)Practical	<ul style="list-style-type: none"> -Email Basics -Types of Email Service Providers, 	Communications and	Theoretical explanation	Daily/oral/written

		<p>such as:</p> <ul style="list-style-type: none"> • Google Gmail • Microsoft Outlook • Yahoo Mail <p>- Obtaining an Email Account - Sending Email Messages - Receiving Email Messages - Accessing Sent Email Messages - Using Email Messages (for general communication) - Document Collaboration (through email or related platforms)</p>	<p>Emails</p>	<p>supported by presentations and practical application</p>	<p>exams and discussions</p>
15	<p>(1)Theoretical ,(1)Practical</p>	<p>- Definition of Cloud Computing - Concept of Cloud Computing - Cloud-Based Office Suites: <ul style="list-style-type: none"> • Office 365 • Google Workspace - Google Cloud Applications: <ul style="list-style-type: none"> • Google Docs • Google Sheets • Google Drive • Google Meet </p>	<p>Introduction to Cloud Computing and Services</p>	<p>Theoretical explanation supported by presentations and practical application</p>	<p>Daily/oral/written exams and discussions</p>

1. Course Name:

Human Rights and Democracy

2. Course Code:

ATU13C

3. Semester / Year:

202^o-202^l, First Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical lectures, with Google Classroom integration.

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

30 hours/first semester, 2 credits

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

Name: Dr. Hussein Mustafa Rasool

Email hussain.rasool.iku@atu.edu.iq

8. Course Objectives

Course Objectives

- Students will understand and appreciate the principles and values of human rights, and learn how to foster respect for and adherence to them among future generations.
- Students will recognize public freedoms and understand their essence in detail..

9. Teaching and Learning Strategies

Strategy

- **Explanation and clarification of concepts through lectures.**
- **Displaying academic materials using data show devices and a display screen.**
- **Preparing reports.**
- **Providing students with foundational concepts and additional topics related to prior learning outcomes for skills, to solve practical problems.**

10. Course Evaluation

The grade distribution out of 100 will be based on the tasks assigned to the student, such as daily preparation, daily and oral exams, monthly and written exams, and reports, etc. (The semester grade will be 30, and the final grade will be 70).

11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

12. Course Structure: Human Rights and Democracy– Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Human Rights – Definition – Objectives Human Rights in Ancient Civilizations, especially the Civilization of Mesopotamia.	Theoretical lectures	Quizzes, midterm exams, and final exams
2	(2)Theoretical		Human Rights in Divine Laws, with a focus on Human Rights in Islam	Theoretical lectures	Quizzes, midterm exams, and final exams
3	(2)Theoretical		Human Rights in Contemporary and Modern History – International Recognition of Human Rights since World War I and the League of Nations/United Nations.	Theoretical lectures	Quizzes, midterm exams, and final exams
4	(2)Theoretical		Regional Recognition of Human Rights: The European Convention on Human Rights 1950, The American Convention	Theoretical lectures	Quizzes, midterm exams, and final exams
5	(2)Theoretical		Non-Governmental Organizations and Human Rights: The International Committee of the Red Cross – Amnesty International – Human Rights Watch – National Human Rights Organizations	Theoretical lectures	Quizzes, midterm exams, and final exams
6	(2)Theoretical		Human Rights in Iraqi Constitutions: Between Theory and Reality	Theoretical lectures	Quizzes, midterm exams, and final exams
7	(2)Theoretical		The Relationship Between Human Rights and Public Freedoms: In the Universal Declaration of Human Rights. In regional covenants and national constitutions	Theoretical lectures	Quizzes, midterm exams, and final exams

8	(2)Theoretical		Economic, Social, and Cultural Human Rights, and Civil and Political Human Rights.	Theoretical lectures	Quizzes, midterm exams, and final exams
9	(2)Theoretical		Modern Human Rights: The Right to Development – The Right to a Clean Environment – The Right to Solidarity – The Right to Religion	Theoretical lectures	Quizzes, midterm exams, and final exams
10	(2)Theoretical		Guarantees for Respecting and Protecting Human Rights at the National Level: Guarantees in the Constitution and Laws – Guarantees in the Principle of the Rule of Law – Guarantees in Constitutional Review – Guarantees in Freedom of the Press and Public Opinion – The Role of Non-Governmental Organizations in Respecting and Protecting Human Rights.	Theoretical lectures	Quizzes, midterm exams, and final exams
11	(2)Theoretical		Democracy: Definition, Types.	Theoretical lectures	Quizzes, midterm exams, and final exams
12	(2)Theoretical		.Concepts of Democracy	Theoretical lectures	Quizzes, midterm exams, and final exams
13	(2)Theoretical		Democracy in the Third World and the World	Theoretical lectures	
14	(2)Theoretical		Concept of Freedoms, Classification of Public Freedoms: Fundamental Freedoms, Intellectual Freedoms, Economic and Social Freedoms	Theoretical lectures	
15	(2)Theoretical		Final Exam	Theoretical lectures	Quizzes, midterm exams, and final exams

Course Description Template - First Year - Second Semester

1. Course Name:	
Quality Control	
2. Course Code:	
MLT121-50-C	
3. Semester / Year:	
202 ^o -202 ^l , second Semester	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours/first semester, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst. Prof. Dr. Rusul Arif Abdul Ali Email rusul.shallan@atu.edu.iq	
8. Course Objectives	
Course Objectives	- Training the student to understand the accuracy of laboratory results, improve the quality of services provided, and deliver reliable results that can be depended upon for clinical decision-making. It also aims to achieve continuous improvement in laboratories, reduce errors, and provide a safe working environment.
9. Teaching and Learning Strategies	
Strategy	-Explanation and clarification through lectures. -Presentation of scientific materials using data show projectors and display screens. -Self-learning by preparing reports on pathological cases in laboratories. -Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.

-Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbo
(curricular books, if any)

Main references (sources)

**Henry's Clinical Diagnosis and Management by Laboratory Methods, chapter 10
Laboratory Information Management System in National Quality Control
Laboratory**

Recommended books
and references
(scientific journals,
reports...)

**Clinical Chemistry – Immunology and Laboratory Quality Control A
Comprehensive Review for Board Preparation, Certification and Clinical Practice**

Electronic Referenc
Websites

12. Course Structure: Quality Control- Theoretical and Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical ,(4)Practical		Introduction to quality control	Theoretical Lecture / Use of Visual Aids	Daily, Monthly, Final
2	(2)Theoretical ,(4)Practical		Medical relevant of QA, Standardised units of the international system	Theoretical Lecture / Use of Visual Aids	exams
3-5	(2)Theoretical ,(4)Practical		Balancing error detection and false rejection	Theoretical Lecture / Use of Visual Aids	Daily, Monthly, Final

6-7	(2)Theoretical ,(4)Practical		Quality control materials	Theoretical Lecture / Use of Visual Aids	exams
8	(2)Theoretical ,(4)Practical		QA techniques for quantitative results	Theoretical Lecture / Use of Visual Aids	Daily, Monthly, Final
9	(2)Theoretical ,(4)Practical		QA techniques for qualitative results	Theoretical Lecture / Use of Visual Aids	exams
10	(2)Theoretical ,(4)Practical		QA techniques for semi- quantitative results	Theoretical Lecture / Use of Visual Aids	Daily, Monthly, Final
11	(2)Theoretical ,(4)Practical		Troubleshoot based on QA results	Theoretical Lecture / Use of Visual Aids	Daily/oral/wri tten exams and discussions
12-14	(2)Theoretical ,(4)Practical		Review	Theoretical Lecture / Use of Visual Aids	Daily/oral/wri tten exams and discussions
15	(2)Theoretical ,(4)Practical		Final exam	Theoretical Lecture / Use of Visual Aids	Daily/oral/wri tten exams and discussions

1. Course Name:

Histological Slides

2. Course Code:

MLT122-50-C

3. Semester / Year:

2020-2021, Second Semester

4. Description Preparation Date:

١٥/٩/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

75 hours, 5 credits

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

Name: Asst. Lect. Noor Hasan Naser Hussein

Email noor.hassan.iku@atu.edu.iq

8. Course Objectives

Course Objectives

- This course is a continuation of the Histological Preparations course from the first semester. By the end of the second semester, students will be able to prepare histological and cytological slides and present them to the specialist physician for the final diagnosis of benign and cancerous diseases.

9. Teaching and Learning Strategies

Strategy

-Explanation and clarification through lectures.
-Presentation of scientific materials using data show projectors and display screens.
-Self-learning by preparing reports in pathological case laboratories.
-Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.
-Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Same sources as the Histological Preparations course.

Recommended books and references
(scientific journals, reports...)

12. Course Structure: Histological Slides– Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Mounting, Adhesives.	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
2-3	2)Theoretical		Staining, classification of stains	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
4-5	2)Theoretical		Staining section	Theoretical lectures using the the PowerPoint program.	Quizzes, midterm exams, and final exams

6	2)Theoretical		Methods of staining .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
7-8	2)Theoretical		Types of stains , preparation of stain, and oxidation of some stains .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
9	2)Theoretical		Stains solvents ,factors affecting staining , storage of stains , how to choose stain .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
10	2)Theoretical		Decalcification, bone tissue .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
11-12	2)Theoretical		Examination for second term.	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
13-14	2)Theoretical		Tissue slide , Freezing microtome .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams
15	2)Theoretical		Final examination .	Theoretical lectures using the PowerPoint program.	Quizzes, midterm exams, and final exams

Course Structure: Histological Slides– Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(3) Practical		Mounting.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
2	(3) Practical		Test for mounting + 4 slides.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
3-4	(3) Practical		Staining: types of stains Routine stain.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
5-6	(3) Practical		Steps of routine staining.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
7	(3) Practical		Test for staining and 2 prepared slides.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
8	(3) Practical		Special stain, verbaefs stain.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
9	(3) Practical		Bests carmine stain.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
10	(3) Practical		P.A.S. and Sudan 3 stain.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
11-12	(3) Practical		Examination for second term.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
13	(3) Practical		Election microscope, preparing tissue & stain.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
14	(3) Practical		Review	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams
15	(3) Practical		Final examination.	Theoretical lecture using PowerPoint and performing the practical experiment by the course instructor in front of the students.	Quizzes, midterm exams, and final exams

1. Course Name:

Molecular Biology

2. Course Code:

MLT123-50-C

3. Semester / Year:

202^o-202^ᶒ, Second Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

60hours, 4 credits

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

Name: Asst. Lec . Dr. Taif Razzaq Majeed

Email taif.najjar@atu.edu.iq

8. Course Objectives

Course Objectives

- This course aims to train students in the essential skills for handling biological samples used in analysis. It will provide students with theoretical knowledge and practical lessons in various specializations related to their profession. Students will be trained in the use of techniques employed in medical laboratories.

9. Teaching and Learning Strategies

Strategy

Explanation and clarification through lectures.
Presentation of scientific materials using data show projectors and display screens.
Self-learning by preparing reports in pathological case laboratories.
Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.
Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Textbook of Molecular Biology
Recommended books and references (scientific journals, reports, etc...)	<ul style="list-style-type: none">- Lippincott Illustrated Reviews: Cell and Molecular Biology- prominent scientific journals in the field of Molecular Biology
Electronic References, Websites	Science direct Google scholar

12. Course Structure: Molecular Biology– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical	The student understands the topic.	Introduction to molecular biology	Theoretical lectures	Quizz+ Attendance.
2	2)Theoretical	The student understands the topic	Cell cycle	Theoretical lectures	Quizz+ Attendance.
3	2)Theoretical	The student understands the topic	DNA and RNA structure	Theoretical lectures	Quizz+ Attendance.
4	2)Theoretical	The student understands the topic	DNA replication	Theoretical lectures	Quizz+ Attendance.
5	2)Theoretical	The student understands the topic	DNA transcription	Theoretical lectures	Quizz+ Attendance.
6-7	2)Theoretical	The student understands the topic	Translation and protein synthesis	Theoretical lectures	Quizz+ Attendance.
8	2)Theoretical	The student understands the topic	Gene expression and regulation	Theoretical lectures	Quizz+ Attendance.
9-10	2)Theoretical	The student understands the topic	Inhibitors of translation and transcription	Theoretical lectures	Quizz+ Attendance.
11	2)Theoretical	The student understands the topic	DNA repair system	Theoretical lectures	Quizz+ Attendance.
12	2)Theoretical	The student understands the topic	Mutation and chromosomal aberrations	Theoretical lectures	Quizz+ Attendance.
13	2)Theoretical	The student understands the topic	Chemical and physical agents that cause mutation	Theoretical lectures	Quizz+ Attendance.
14	2)Theoretical	The student understands the topic	Recombinant DNA technology (cDNA technique)	Theoretical lectures	Quizz+ Attendance.
15	2)Theoretical	The student understands the topic	Cloning and application (briefly)	Theoretical lectures	Quizz+ Attendance.

Course Structure: Molecular Biology– Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2) Practical		Introduction to molecular biology	Practical Application	Quizzes, midterm exams, and final exams
2	(2) Practical		Instruments and materials used in molecular biology	Practical Application	Quizzes, midterm exams, and final exams
3	(2) Practical		DNA isolation	Practical Application	Quizzes, midterm exams, and final exams
4	(2) Practical		RNA isolation	Practical Application	Quizzes, midterm exams, and final exams
5	(2) Practical		Electrophoresis	Practical Application	Quizzes, midterm exams, and final exams
6	(2) Practical		Restriction enzymes	Practical Application	Quizzes, midterm exams, and final exams
7	(2) Practical		Genetic engineering	Practical Application	Quizzes, midterm exams, and final exams
8	(2) Practical		c DNA techniques	Practical Application	Quizzes, midterm exams, and final exams
9	(2) Practical		Southran blot technique	Practical Application	Quizzes, midterm exams, and final exams
10	(2) Practical		Northran blot technique	Practical Application	Quizzes, midterm exams, and final exams
11-12	(2) Practical		Polymerase chain reaction (PCR) applications and protocol	Practical Application	Quizzes, midterm exams, and final exams
13	(2) Practical		Gene cloning	Practical Application	Quizzes, midterm exams, and final exams
14	(2) Practical		Review	Practical Application	Quizzes, midterm exams, and final exams
15	(2) Practical		Final exam	Practical Application	Quizzes, midterm exams, and final exams

1. Course Name:

Laboratory Safety

2. Course Code:

MLT124-50-C

3. Semester / Year:

202^o-202¹, second Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

45hours, 3 credits

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

Name: Asst. Lec. Rabab Murtadha Abed Jaber

Email rabab.al-hashemy@atu.edu.iq

8. Course Objectives

Course Objectives

- The student's ability to acquire knowledge and skills, and general practice of safety and its procedures in pathological analysis laboratories.

9. Teaching and Learning Strategies

Strategy

Explanation and clarification through lectures.
Presentation of scientific materials using data show projectors and display screens.
Self-learning by preparing reports in pathological case laboratories.
Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

12. Course Structure: Laboratory Safety- Theoretical and Practical

Required textbo (curricular books, if any)	
Main references (sources	
Recommended books and references (scientific journals, reports...)	
Electronic Referenc Websites	Science direct Google scholar

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	(2)Theoretical ,(2)Practical		Introduction to laboratory safety.	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
3	(2)Theoretical ,(2)Practical		General lab. Safety roles	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
4-5	(2)Theoretical ,(2)Practical		Personal protective equipment	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
6-8	(2)Theoretical ,(2)Practical		Biological hazards	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
9-10	(2)Theoretical ,(4)Practical		Types of biological hazards	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
11	(2)Theoretical ,(4)Practical		Chemical hazards	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
12	(2)Theoretical ,(4)Practical		Types of chemical hazards	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams
14-15	(2)Theoretical ,(4)Practical		Review	Theoretical lecture using PowerPoin	Daily, Monthly, Final exams

1. Course Name:

Blood Transfusion

2. Course Code:

MLT125-50-C

3. Semester / Year:

202^o-202^ᶓ, second Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

45hours, 3 credits

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

Name: Asist. Lec . Eqbal Yousif Abed AL-ziyadi

Email : eqbal.abed@atu.edu.iq

8. Course Objectives

Course Objectives

- The student will learn about blood banks, types of blood transfusion methods, cross-matching blood for patients and donors, and methods of preserving blood and its derivatives..

9. Teaching and Learning Strategies

Strategy

- **Explanation and clarification through lectures.**
- **Presentation of scientific materials using data show projectors and display screens.**
- **Self-learning by preparing reports in pathological case laboratories.**
- **Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.**
- **Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.**
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for

continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Clinical hematology in medical practice
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	Science direct Google scholar

12. Course Structure: Blood Transfusion– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(1)Theoretical		Information on blood transfusion	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
2	(1)Theoretical		Blood components, blood collection, choosing the donor, physiological examination, and time of collection.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
3	(1)Theoretical		Complete the second week's principles.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
4	(1)Theoretical		Blood group: ABO system, Rh factor, Lewis system.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
5	(1)Theoretical		Classification of blood typing (long & short)	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
6	(1)Theoretical		Direct and indirect coomb's test of blood	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
7	(1)Theoretical		Process of cross matching test, reporting and record the results.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
8	(1)Theoretical		Roles of blood transfusion , blood disease	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
9	(1)Theoretical		Pregnant care , leukemia of infants	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
10	(1)Theoretical		Complete the principles above	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
11	(1)Theoretical		Separation of blood contents, methods of separation.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
12	(1)Theoretical		Complete the principle above.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
13	(1)Theoretical		Component of blood after storage, anticoagulants.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
14	(1)Theoretical		Blood transfusion disadvantage.	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams
15	(1)Theoretical		Quality control , Tools ,Persons , Method	Theoretical lecture using PowerPoint	Daily, Monthly, Final exams

Course Structure: Blood Transfusion–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2) Practical		Instruments used in blood collection, examination, and blood transfusion.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
2	(2) Practical		Donor choosing, how blood is collected, donor care during and after blood giving.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
3	(2) Practical		Methods of blood typing, tube method.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
4	(2) Practical		Methods of blood typing, slide method, the difference between the long and short method .	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
5	(2) Practical		Coomb,s test , direct method .	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
6	(2) Practical		Coomb’s test, indirect method.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
7	(2) Practical		Compatibility tests and report writing.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
8	(2) Practical		Identification of disadvantage.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
9	(2) Practical		Blood plasma fraction and pregnant care.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
10	(2) Practical		Blood fraction methods.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
11	(2) Practical		Blood fraction methods.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
12	(2) Practical		Methods of blood storage and components.	Performing examinations by the course instructor and students	
13	(2) Practical		Quality control.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
14	(2) Practical		Transfusion instrument and fluids giving.	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams
15	(2) Practical		Refreshing and moves presenting (Blood bank).	Performing examinations by the course instructor and students	Quizzes, midterm exams, and final exams

1. Course Name:	
Biochemistry	
2. Course Code:	
MLT126-50-C	
3. Semester / Year:	
2025-2026, second Semester	
4. Description Preparation Date:	
15/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hours, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr.Douaa Abdulhussain Kadhum Naief	
Email Douaa.kadhum@atu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> - By the end of the second semester, the student will have benefited from the Biochemistry course by understanding cell structure and basic biochemical components, identifying their types, and differentiating between compounds and calculating energy. - The student will have benefited from qualitative and quantitative diagnostic methods for carbohydrates, amino acids, and enzymes, including their detection mechanisms using reagents. - The student will also have benefited from biochemistry in identifying available chemical tools, equipment, and reagents in the laboratory.

9. Teaching and Learning Strategies

Strategy	<p>Explanation and clarification through lectures.</p> <p>Presentation of scientific materials using data show projectors and display screens.</p> <p>Self-learning through preparing reports in pathological case laboratories.</p> <p>Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.</p> <p>Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.</p>
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbo (curricular books, if any)	
Main references (sources	<p>Jacob Anthikad, Nutrition and Biochemistry for Nurses, 1st Ed., 2009.</p> <p>Reference Books</p> <p>-\Jaroslav Racek and Daniel Rajdl , Clinical Biochemistry, first ed ,2016</p> <p>-*Herbert Fromm and Mark Hargrove, Essentials of Biochemistry, 2012</p> <p>-*Vijay Kumar Kiran Dip Gill, Basic Concepts in Clinical Biochemistry: A Practical Guide,2018</p> <p>-‡Uma Bhardwaj & Ravindra Bhardwa, Biochemistry for Nurses,2012</p> <p>-°DM Vasudevan , Sreekumari S &Kannan Vaidyanathan,Textbook of Biochemistry for Medical Students,2013</p>
Recommended books and references (scientific journals, reports...)	Scientific Journals, Periodicals, and Research in Biochemistry
Electronic Referenc Websites	<p>Science direct</p> <p>Google scholar</p>

12. Course Structure: Biochemistry- Theoretical and Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical ,(4)Practical	Introduction to Biochemistry and Cell Components	Biochemistry Biochemistry compounds, cell.	Theoretical lecture	Quiz
2	(2)Theoretical ,(4)Practical	Types and Classification of Carbohydrates	Carbohydrates, classification ,its presence ,its importance, General properties of monosaccharide's.	Theoretical lecture	Quiz
3	(2)Theoretical ,(4)Practical	Importance of Monosaccharides, Disaccharides, and Polysaccharides, and their Reduction Mechanisms within the Human Body	Important monosaccharide's. Derivatives of monosaccharide's, reducing sugars. Its presence in human body , its reactions Disaccharides and polysaccharides properties, reactions occurrence	Theoretical lecture	Quiz
4	(2)Theoretical ,(4)Practical	Lipids: Classification and Properties	Lipids ,classification ,properties. Fatty acids ,properties , reactions	Theoretical lecture	Quiz
5	(2)Theoretical ,(4)Practical	Essential Fatty Acids	Essential fatty acids and unessential fatty acids . properties, reactions. Unsaturated fatty acids , properties its importance,	Theoretical lecture	Quiz
6	(2)Theoretical ,(4)Practical	Derived Lipids and Cholesterol	Compound lipids ,derived lipids cholesterol, its existence	Theoretical lecture	Quiz
7	(2)Theoretical ,(4)Practical	Proteins and Amino Acids	Proteins ,general properties ,peptide bond. Amino acids , properties , occurrence.	Theoretical lecture	Quiz
8	(2)Theoretical ,(4)Practical	Classification of Amino Acids and Proteins	Amino acid ,classification ,reactions. Classification of proteins ,chemical properties of proteins	Theoretical lecture	Quiz
9	(2)Theoretical ,(4)Practical	Methods for Separating Compounds by Chromatography	Separation of organic compounds by chromatography.	Theoretical lecture	Quiz
10	(2)Theoretical ,(4)Practical	Amino Acid Separation	Separation of amino acids. Examination	Theoretical lecture	Quiz
11	(2)Theoretical ,(4)Practical	Nucleic Acids	Nucleic acids, nucleoprotein, analysis of nucleoprotein.	Theoretical lecture	Quiz
12	(2)Theoretical ,(4)Practical	Enzymes	Enzymes ,nomenclature, classification. Enzymes, properties , factors in fleeing the rate of enzymatic reactions. Enzyme ,inhibitions.	Theoretical lecture	Quiz
13	(2)Theoretical ,(4)Practical	Hormones: Classification and Differentiation from	Hormones , properties. , Classification of hormones.	Theoretical lecture	Quiz

		Enzymes	Protein hormones , non protein hormones		
14	(2)Theoretical , (4)Practical	Vitamins	Vitamins ,water soluble vitamins, classification, occurrence, deficiency.	Theoretical lecture	Quiz
15	(2)Theoretical , (4)Practical	Water-Soluble and Fat-Soluble Vitamins	Fat soluble vitamins , classification, occurrence, deficiency Complete of vitamins.	Theoretical lecture	Quiz

1. Course Name:

English Language

2. Course Code:

ATU10C

3. Semester / Year:

2025-2026, second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical lectures.

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

2hours, 2 credits

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

Name: Durgham Hussein Abbas Jabir (External Lecturer)

Email durghamha1980@gmail.com

8. Course Objectives

Course Objectives

- This course aims to introduce students to the fundamentals of English grammar and medical terminology.

9. Teaching and Learning Strategies

Strategy

Explanation and clarification through lectures.
Presentation of material using data show projectors and display screens.
Self-learning through preparing reports at the end of the semester.
Providing students with fundamentals and additional topics related to prior learning outcomes for skills.

10. Course Evaluation

The grade distribution out of 100 will be based on the tasks assigned to the student, such as daily preparation, daily and oral exams, monthly and written exams, and reports, etc. The semester grade will be 30, and the final grade will be 70.

11. Learning and Teaching Resources

12. Course Structure: English Language- Theoretical

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Defining the meaning of roots and suffixes added to the end of words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
2	(2)Theoretical		Introducing prefixes added to the beginning of words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
3	(2)Theoretical		Principles of reading medical terminology.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
4	(2)Theoretical		How to pronounce medical words correctly.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
5	(2)Theoretical		Identifying silent letters in words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
6	(2)Theoretical		How to pronounce the letter C in English.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
7	(2)Theoretical		How to pronounce the letter G in English.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
8	(2)Theoretical		Identifying the most important medical terms used between medical staff and patients.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
9	(2)Theoretical		Understanding some specific English grammar rules.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
10	(2)Theoretical		How to differentiate between singular and plural words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
11	(2)Theoretical		A quiz on some terminology.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
12	(2)Theoretical		The twelve rules of plurality in medical terminology.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
13	(2)Theoretical		Review of past weeks.	Lecture Explanation + Student	Quizzes, midterm exams, and

				Discussion	final exams
14	(2)Theoretical		Using English grammar in medical writing.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
15	(2)Theoretical		Comprehensive review.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams

1. Course Name:	
Arabic Language	
2. Course Code:	
ATU11C	
3. Semester / Year:	
2025–2026, second Semester	
4. Description Preparation Date:	
15/9/2025	
5. Available Attendance Forms:	
In-person theoretical lectures.	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 theoretical hours, 2 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Saif Al-Din Muhannad Kadhum Email: .saif.mohand.iku@atu.edu.iq	
8. Course Objectives	
Course Objectives	- This course aims to qualify students to understand the fundamentals of the Arabic language and to use correct writing in official correspondence
9. Teaching and Learning Strategies	
Strategy	- Explanation and clarification through lectures. - Presentation of scientific materials using data show projectors and display screens. - Self-learning through preparing reports. - Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.
10. Course Evaluation	
The grade distribution out of 100 will be based on the tasks assigned to the student, such as daily preparation, daily and oral exams, monthly and written exams, and reports, etc. The	

12. Course Structure: Arabic Language- Theoretical

semester grade will be 30, and the final grade will be 70.

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Introduction to Linguistic Errors – Taa Marbutah and Taa Maftouha.	Theoretical Lecture	Quizzes, midterm exams, and final exams
2	(2)Theoretical		Rules for writing Alif Maddudah and Alif Maqsurah – Solar and Lunar Letters.	Theoretical Lecture	Quizzes, midterm exams, and final exams
3	(2)Theoretical		Dhad and Zha.	Theoretical Lecture	Quizzes, midterm exams, and final exams
4	(2)Theoretical		Writing the Hamza.	Theoretical Lecture	Quizzes, midterm exams, and final exams
5	(2)Theoretical		Punctuation Marks.	Theoretical Lecture	Quizzes, midterm exams, and final exams
6	(2)Theoretical		Nouns and Verbs and differentiating between them.	Theoretical Lecture	Quizzes, midterm exams, and final exams
7	(2)Theoretical		Ma' eel (Objects/Complements).	Theoretical Lecture	Quizzes, midterm exams, and final exams
8	(2)Theoretical		Numbers.	Theoretical Lecture	Quizzes, midterm exams, and final exams
9 -10	(2)Theoretical		Applications of Common Linguistic Errors.	Theoretical Lecture	Quizzes, midterm exams, and final exams
11	(2)Theoretical		Noon and Tanween – Meanings of Prepositions.	Theoretical Lecture	Quizzes, midterm exams, and final exams
12	(2)Theoretical		Formal Aspects of Administrative Correspondence.	Theoretical Lecture	Quizzes, midterm exams, and final exams
13-14	(2)Theoretical		Language of Administrative Correspondence.	Theoretical Lecture	Quizzes, midterm exams, and final exams
15	(2)Theoretical		Samples of Administrative Correspondence.	Theoretical Lecture	Quizzes, midterm exams, and final exams

Course Description Template - Second Year - First Semester

1. Course Name:	
Microbiology	
2. Course Code:	
MLT211-50-C	
3. Semester / Year:	
2025-2026/ First Semester	
4. Description Preparation Date:	
15/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hours, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Nidhal Abdul Hussein Messan Mashkooor Al-Bdairi (External Lecturer)	
Email : nidhal.albdairi@uokufa.edu.iq	
8. Course Objectives	
Course Objectives	This course aims to equip students with information that will enable them to understand the fundamentals of bacteriology. First, students will study the pathogenicity of each bacterial type and their medical significance. Ultimately, students will be familiar with concepts of pathogenic bacteria, the pathogenicity of each bacterial species individually, and the types of toxins they produce. The course will also enable students to isolate pathogenic bacteria from various clinical samples, identifying their type through colony morphology, color, odor, biochemical characteristics, and staining properties.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> - explanation and clarification through lectures. - Presentation of scientific materials using data show projectors and display screens. - Self-learning by preparing reports in pathological case laboratories. - Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems. - Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.
10. Course Evaluation	

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Educational Kits
Main references (sources)	Medical Bacteriology / Medical Microbiology
Recommended books and references (scientific journals, reports.)	3^{ed} edition \ microbiology and infectious diseases \ editor: Gabriel virella, M.D., Ph.D.
Electronic References, Websites	https://www.ncbi.nlm.nih.gov/pubmed/

12. Course Structure: Microbiology– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Introduction to medical microbiology, Microorganism, instruction with the host, microbial virulence, historical significance	Theoretical lecture.	Daily, Monthly, Final exams
2	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	classes of pathogenic microorganisms Viruses, bacteria, fungi, parasites	Classroom discussion method.	Daily, Monthly, Final exams
3	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Classification and Scientific nomenclature of the bacteria. Normal Flora	Theoretical lecture.	Daily, Monthly, Final exams
4	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Bacterial Structure	Classroom discussion method.	Daily, Monthly, Final exams
5	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Bacterial division and growth	Theoretical lecture.	Daily, Monthly, Final exams
6	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Bacterial Genetics, DNA transfer between bacteria	Classroom discussion method.	Daily, Monthly, Final exams
7	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Pathogenicity of bacteria	Theoretical lecture.	Daily, Monthly, Final exams
8	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	TOXIGENESIS (bacterial toxin).	Classroom discussion method.	Daily, Monthly, Final exams
9	(2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Classes of antibacterial agents	Theoretical lecture.	Daily, Monthly, Final exams
10	(2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	General characteristic and classification of virus	Classroom discussion method.	Daily, Monthly, Final exams
11	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Viral genetics, a mutation, instruction between viruses, the role of genetic variation in evolution of viruses.	Theoretical lecture.	Daily, Monthly, Final exams
12	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Pathogenicity of viruses	Classroom discussion method.	Daily, Monthly, Final exams
13	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Classes of antiviral agents	Theoretical lecture.	Daily, Monthly, Final exams
14	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Characteristic and classification of medical fungi.	Classroom discussion method.	Daily, Monthly, Final exams
15	2)Theoretical	Understanding the topic and the ability to correctly apply experiments and record results	Morphology and structure of fungi, Classes of antifungal agents	Theoretical lecture.	Daily, Monthly, Final exams

Course Structure: Microbiology–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Introduction, behavior inside Lab.	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
2	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Sterilization and disinfection methods.	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
3	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Specimen Collection and Processing	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
4	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Microscopic Examination of Infected Materials	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
5	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Use of Colonial Morphology for the Presumptive Identification of Microorganisms.	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
6	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Biochemical Identification of Bacteria	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
7	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Immunological methods used for microorganism detection	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
8	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	applications of molecular diagnostics, nucleic acid hybridization techniques	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
9	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	nucleic acid amplification procedures	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
10	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Other Nucleic Acid Amplification Reactions, Nucleic Acid Sequence Based Amplification	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
11	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Antimicrobial Susceptibility Testing, selecting antimicrobial agents for testing, Reporting of Susceptibility Test Results.	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
12	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	traditional antimicrobial susceptibility TEST METHODS, Inoculum Preparation and Use of McFarland Standards, Dilution Susceptibility Testing Methods, Antimicrobial Stock Solutions, Broth-Macrodilution (Tube-Dilution) Tests, Agar-Dilution Tests	Practical Lecture and Student-Led Experiments	

13	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Disk Diffusion Testing, Principle, Establishing Zone-Diameter. Interpretive Breakpoints, Disk Storage, Inoculation and Incubation, Reading Plates and Test Interpretation	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
14	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Modified Methods for Testing Slow-Growing or Fastidious Bacteria	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams
15	(4) Practical	Understanding the topic and the ability to correctly apply experiments and record results	Susceptibility Testing of Anaerobes	Practical Lecture and Student-Led Experiments	Quizzes, midterm exams, and final exams

1. Course Name:	
Hematology 1	
2. Course Code:	
MLT212-50-C	
3. Semester / Year:	
2025-2026/ First Semester	
4. Description Preparation Date:	
15/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hours, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst. pro. Haqi Abdul Abbas Issa Email kin.hkee@atu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> - By the end of the course, students will have a strong grasp of the fundamentals of hematology and blood tests, including high-precision techniques to achieve accurate results. They will also understand the components and functions of blood and how the body fights diseases. Students will learn how the body's parts are supplied with oxygen and become proficient in using laboratory tools and handling blood samples received in the lab. - Students will also gain knowledge of the history of hematology and blood diseases, the importance of a strong and healthy human body in resisting various diseases, especially during childhood and old age. They will learn how to enhance the formation of various blood components and how clotting occurs in response to bleeding.

9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> - Explanation and clarification of topics. - Presentation of scientific materials using data show projectors and display screens. - Preparing reports in pathological case laboratories. - Providing students with foundational and additional topics related to prior skills to solve practical problems. - Applying theoretical knowledge in various laboratories affiliated with teaching hospitals.
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Basic of hematology: Functions And Disorders Of The blood System
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	Pubmed (NCBI data base) Google scholar

12. Course Structure: Hematology 1– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Introduction to the importance of hematology. Study what blood contains.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
2	2)Theoretical		The hemopoiesis in fetuses, children, and adults.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
3	2)Theoretical		The normal red blood cells, importance, Structure, erythropoiesis, and Function.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
4	2)Theoretical		Polycythemia, causes, Clinical Signs, and Laboratory diagnosis.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
5	2)Theoretical		Study the red cell morphology in health and disease. Abnormality of R.B.C in size.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
6	2)Theoretical		Abnormality of R.B.C in shape.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
7	2)Theoretical		Abnormality of R.B.C in colour.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
8	2)Theoretical		The normal Hb. Of the blood, contains and importance.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
9	(2)Theoretical		Study the types of normal Hb. Types.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
10	(2)Theoretical		Common Hb. Variant.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
11	2)Theoretical		Anemia. Definition, classification and types.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
12	2)Theoretical		Anemia. Causes .clinical signs and laboratory Finding.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
13	2)Theoretical		Megaloblastic anemia and Pernicious anemia.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
14	2)Theoretical		Aplastic anemia and hemolytic anemia.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams
15	2)Theoretical		Sickle Cell an. And acquired and autoimmune hemolytic anemia.	Theoretical Lecture and Classroom Discussion Method	Daily, Monthly, Final exams

Course Structure: Hematology 1 –Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical		Identify the hematological laboratory system.	Student-Led Experiments	Quizzes, midterm exams, and final exams
2	(4) Practical		Erythrocyte Sedimentation Rate.	Student-Led Experiments	Quizzes, midterm exams, and final exams
3	(4) Practical		Packed Cell Volume.	Student-Led Experiments	Quizzes, midterm exams, and final exams
4	(4) Practical		Hb. Estimation	Student-Led Experiments	Quizzes, midterm exams, and final exams
5	(4) Practical		Study the absolute Values, include MCV, MCH, and MCHC.	Student-Led Experiments	Quizzes, midterm exams, and final exams
6	(4) Practical		Abnormality of R.B.C in color, size and inclusion bodies.	Student-Led Experiments	Quizzes, midterm exams, and final exams
7	(4) Practical		Abnormality of R.B.C in shape.	Student-Led Experiments	Quizzes, midterm exams, and final exams
8	(4) Practical		Examination.	Student-Led Experiments	Quizzes, midterm exams, and final exams
9	(4) Practical		Study the Reticulocyte Count.	Student-Led Experiments	Quizzes, midterm exams, and final exams
10	(4) Practical		Anemic types.	Student-Led Experiments	Quizzes, midterm exams, and final exams
11	(4) Practical		Examination.	Student-Led Experiments	Quizzes, midterm exams, and final exams
12	(4) Practical		Study the abnormal Hb. (Hb.S).	Student-Led Experiments	Quizzes, midterm exams, and final exams
13	(4) Practical		Study the haemostasis disorders.	Student-Led Experiments	Quizzes, midterm exams, and final exams
14	(4) Practical		Study the bleeding time.	Student-Led Experiments	Quizzes, midterm exams, and final exams
15	(4) Practical		Study the Clotting time.	Student-Led Experiments	Quizzes, midterm exams, and final exams

1. Course Name:

Clinical Chemistry 1

2. Course Code:

MLT213-50-C

3. Semester / Year:

2025-2026/ First Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

90hours, 6 credits

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

Name: Lect. Dr. Eatmad Abed Ali abed Ulrhman

Email Eatmar.alshawi@atu.edu.iq

8. Course Objectives

Course Objectives

- This course aims to introduce metabolic diseases and their diagnostic methods through clinical chemistry analyses.

9. Teaching and Learning Strategies

Strategy

- Explanation and clarification through lectures.
- Presentation of scientific materials using data show projectors and display screens.
- Self-learning by preparing reports in pathological case laboratories.
- Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.
- Applying theoretical topics practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Clinical Chemistry and metabolism
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	AK Lecture

12. Course Structure: Clinical Chemistry 1– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical	Understanding clinical chemistry and the mechanism of clinical sample collection and handling.	Introduction to clinical chemistry Disciplinary of clinical chemistry Introduction of metabolism, types of metabolism (anabolism and catabolism) collection and handing of blood samples , anticoagulant , urine compassion ,urine collection methods urine preservative	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
2	2)Theoretical	Understanding the mechanism of fluid and blood pH balance.	Acid-base balance	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
3-4	2)Theoretical	Understanding the mechanism of electrolyte function within the body.	Electrolytes (Na+, K+, Cl-, Ca2+, Mg, ect...) Diseases related to increase and decrease of electrolytes	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
5	2)Theoretical	Understanding the functions of trace elements in the body and their relationship to metabolic diseases.	Trace element [Cu+2, Ceruloplasmin, Zn, Mn], disease appeared in abnormal metabolism of these metals.	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
6-7	2)Theoretical	Understanding types of carbohydrates, and the body's mechanism for carbohydrate digestion and absorption, and sugar imbalances.	Glucose digestion and absorption (glucose metabolism) Glucose uptake by cells Glycolysis and hormones that regulate glycolysis	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
8	2)Theoretical		Exam	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
9	2)Theoretical	Understanding and comprehending carbohydrate reactions within the body (cells) and identifying the Krebs cycle.	Tricyclic acid (TCA, Krebs' cycle) 1- Reactions of TCA 2- Energy production of TCA 3- Function and regulationof TCA 4- dysfunction of TCA	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
10	2)Theoretical	Understanding and comprehending glycogen metabolism and the problems associated with its metabolic imbalance.	Glycogen metabolism 1- Regulation of synthesis 2- disorders of glycogen metabolism	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
11	(2)Theoretical	Understanding the mechanism of glucose production from the liver during fasting.	Gluconeogenesis Precursors (such as Pyruvate, lactate, alanine, ect...)	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams
12-14	(2)Theoretical	Identifying diabetes	Diabetes Mellitus	Theoretical	Daily,

		and its types.	1- blood glucose and regulation of blood glucose (role of insulin and glucagon hormones in glucose regulation) 2- Hyperglycemia (types of DM) 3- Hypoglycemia	Lecture with Group Discussion Method	Monthly, Final exams
15	2)Theoretical	General review for the final exam.	Review	Theoretical Lecture with Group Discussion Method	Daily, Monthly, Final exams

Course Structure: Clinical Chemistry1 –Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical	Understanding the most important safety measures in clinical chemistry laboratories.	Introduction to clinical chemistry and safety (Personal protective equipment's PPE)	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
2	(4) Practical	Understanding and knowing the mechanism of action of the spectrophotometer .	Spectrophotometer	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
3-6	(4) Practical	Understanding and identifying the procedure for analyzing blood electrolytes.	Electrolytes estimation (Na ⁺ , K ⁺ , Cl ⁻ , Ca ²⁺ , Mg, ect....)	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
7	(4) Practical	Understanding and identifying the procedure for analyzing blood electrolytes.	Estimation of inorganic phosphate in Serum ,unknown	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
8	(4) Practical	Midterm Exam.	Exam	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
9-11	(4) Practical	Understanding and identifying the procedure for analyzing trace elements in the blood.	Exam Trace element estimation [Cu ²⁺ , Ceruloplasmin, Zn, Mn]	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
12-14	(4) Practical	Understanding and identifying the procedure for analyzing iron and iron stores in the blood.	Iron and total iron binding capacity (TIBC)	Performing Practical Experiments by Students	Quizzes, midterm exams, and final exams
15	(4) Practical		Review for final exam		Quizzes, midterm exams, and final exams

1. Course Name:	
Immunology	
2. Course Code:	
MLT214-50-C	
3. Semester / Year:	
2025-2026/First Semester	
4. Description Preparation Date:	
15/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hours, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Dr. Angham Najah Hadi Email kin.angh22@atu.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> - By the end of the course, students will have a strong grasp of the fundamentals of immunology and serology, including immunological tests and high-precision techniques to achieve accurate results. They will also understand the components and functions of the immune system and how the body fights diseases. Students will become proficient in using laboratory tools and handling samples received in serology or immunology laboratories. - Students will also gain knowledge of the history of immunology and the importance of a strong and healthy human immune system in resisting various diseases, especially during childhood and old age. They will learn how to develop various vaccines by tracking cellular and humoral immune responses against different parasitic, bacterial, fungal, and viral pathogens, in addition to exposure to the toxins of these pathogens.

9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> - Explanation and clarification of topics. - Presentation of scientific materials using data show projectors and display screens. - Preparing reports in pathological case laboratories. - Skill Enhancement: Providing students with foundational and additional topics related to prior skills to solve practical problems. - Applying theoretical knowledge in various laboratories affiliated with teaching hospitals.
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Immunology and Serology Textbook
Main references (sources)	Basic Immunology: Functions And Disorders Of The Immune Abul K. Abbas
Recommended books and references (scientific journals, reports.)	Beat auto immune
Electronic References, Websites	Pubmed(NCBI data base), Science direct, and Google scholar

12. Course Structure: Immunology– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Immunology: Definition and classification of immune divisions, innate and adaptive immunity, factors and defenses of innate immunity.	Theoretical Lecture	Questioning or Testing Students as Needed
2	2)Theoretical		The immune system, lymphoid tissues and cells: their origin, receptors, and maturation stages, primary and secondary lymphoid organs.	Theoretical Lecture	Questioning or Testing Students as Needed
3	2)Theoretical		Phagocytosis: Phagocytes, monocytes, inflammation and phagocytosis. Antigen-presenting cells: Origin, maturation, receptors, types.	Theoretical Lecture	Questioning or Testing Students as Needed
4	2)Theoretical		Antigen and antigenic determination: Definition, characteristics, types of antigens (exogenous and endogenous).	Theoretical Lecture	Questioning or Testing Students as Needed
5	2)Theoretical		Antibodies: Definition of antibody, structure, types, characteristics, synthesis and release.	Theoretical Lecture	Questioning or Testing Students as Needed
6	2)Theoretical		Immune response: Primary and secondary, their characteristics and differences, regulation of the immune response.	Theoretical Lecture	Questioning or Testing Students as Needed
7	2)Theoretical		Major histocompatibility complex (MHC): Definition, classes, role in antigen presentation.	Theoretical Lecture	Questioning or Testing Students as Needed
8	2)Theoretical		Complements: Definition of complement, activation, activation pathways, inhibitors, diseases associated with complement deficiency.	Theoretical Lecture	Questioning or Testing Students as Needed
9	(2)Theoretical		Cytokines.	Theoretical Lecture	Questioning or Testing Students as Needed
10	(2)Theoretical		Immunity against bacteria and toxins: Mechanism of the immune system in defending against bacteria.	Theoretical Lecture	Questioning or Testing Students as Needed
11	(2)Theoretical		Immunity against viruses, immunity against parasites. Immunity against fungi.	Theoretical Lecture	Questioning or Testing Students as Needed
12	(2)Theoretical		Anti-tumor immunity: Definition of tumor, tumor-associated antigens, their types, their relationship to different tumors, mechanisms of immune evasion.	Theoretical Lecture	Questioning or Testing Students as Needed
13	(2)Theoretical		Hypersensitivity: Definition, different patterns, diseases resulting from it.	Theoretical Lecture	Questioning or Testing Students as Needed
14	(2)Theoretical		Innate and acquired immunodeficiency: Types and theories.	Theoretical Lecture	Questioning or Testing Students as Needed
15	2)Theoretical		Vaccination, types of vaccines.	Theoretical Lecture	Questioning or Testing Students as Needed

Course Structure: Immunology–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical		General Guidelines for Laboratory Work in the Immunology Lab	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
2	(4) Practical		Clinical Sample Collection and Handling in the Immunology Lab	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
3	(4) Practical		clinical Sample Collection and Handling in the Immunology Lab	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
4	(4) Practical		Preparing Red Blood Cell Suspensions and Methods for Blood Sample Preservation	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
5	(4) Practical		Antigens and Their Types	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
6	(4) Practical		Antibodies and Methods of Acquiring Immunity	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
7	(4) Practical		Antigen-Antibody Reactions	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
8	(4) Practical		CRP Analysis and Pregnancy Tests	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
9	(4) Practical		Typhoid Detection Tests	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
10	(4) Practical		Measles Detection Tests	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
11	(4) Practical		VDRL Test	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
12	(4) Practical		Immunological Virus Tests	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
13	(4) Practical		IMN Tests	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
14	(4) Practical		Echinococcus Slide Test	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment
15	(4) Practical		Toxoplasmosis Test	Performing Practical Experiments by Students	Daily, Oral, and Monthly Assessment

1. Course Name:	
Protozoa	
2. Course Code:	
MLT215-50-C	
3. Semester / Year:	
2025-2026/ First Semester	
4. Description Preparation Date:	
15/9/2025	
5. Available Attendance Forms:	
In-person theoretical and practical lectures, with Google Classroom integration	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90hours, 6 credits	
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant Lecturer Dr. Mona Adel Ismail Email mona.almontafaki@atu.edu.iq	
8. Course Objectives	
Course Objectives	- This course provides an introduction to key medical parasites, focusing on understanding their mechanisms of development and the factors leading to parasitic diseases. Students will learn about the most common parasitic diseases encountered in laboratories and how to classify parasites. A significant part of the course involves analyzing student results and comparing them with standard samples
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> - Lectures: Topics will be clarified and explained through detailed lectures. - Visual Aids: Scientific materials will be presented using data projectors and display screens. - Self-Learning: Students will engage in independent study by preparing reports in pathological case laboratories. - Problem-Solving: Students will be equipped with fundamental and additional topics related to prior learning outcomes to solve practical problems. - Practical Application: Theoretical concepts will be applied practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Text book of Medical Parasitology
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	Websites

12. Course Structure: Protozoa– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical	The student recognizes	Defines the parasites ,parasitology types of parasites ;Types of host Classification of parasites Protozoa + metazoan Metazoa [helminthes and arthropoda]	Theoretical Lecture	Quiz - Attendance
2	2)Theoretical	The student understands the topic	Introduction generally in characteristic feature of protozoa and classification:- Rhizopoda ,Mastigophora ,Cilophora (ciliate) ,Telospora	Theoretical Lecture	Quiz - Attendance
3	2)Theoretical	The student understands the topic	Class Rhizopoda Pathogenic amoeba Entamoeba histolytica Morphology ,life cycle ,Pathogenicity ,Lab.diagnosis	Theoretical Lecture	Quiz - Attendance
4	2)Theoretical	The student understands the topic	Few of morphology ,pathogenicity ,diagnosis of :- Entamoeba gingivalis , A canthamoeba ,Naegleria	Theoretical Lecture	Quiz - Attendance
5	2)Theoretical	The student understands the topic	Different between Entamoeba coli and E. histolytica . and morphology , Lab, diagnosis of Iodamoeba butschlii , Endolimax nana ,E. dispar ,Dientamoeba fragilis	Theoretical Lecture	Quiz - Attendance
6	2)Theoretical	The student understands the topic	Class Mastigophor or Flagellates generally introduction in characteristic feature and classification in (intestinal flagellate, blood and tissue flagellates ,genital flagellates). Intestinal Flagellate :- Giardia lamblia ,Chilomastix mesnili ,Trichomonas hominis ,Morphology ,life cycle ,pathogenicity ,and lab. Diagnosis	Theoretical Lecture	Quiz - Attendance
7	2)Theoretical	The student understands the topic	Genital flagellate Trichomonas vaginales Oral flagellates Trichomonas tenax Morphology ,pathogenicity and lab. diagnosis	Theoretical Lecture	Quiz - Attendance
8	2)Theoretical	The student understands the topic	Tissue and blood flagellate Haemoflagellates forms. Lishmania donovani Lishmania tropica Lishmania brazeliencis Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
9	(2)Theoretical	The student understands the topic	Trypanosoma cruzi Trypanosoma brucei Morphology ,life cycle ,pathogenicity, Lab. Diagnosis Sample of Tse-tse fly and Reduviid bug.	Theoretical Lecture	Quiz - Attendance
10	(2)Theoretical	The student understands the topic	Class Ciliophra (cilata) Blantidium coli Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
11	(2)Theoretical	Review of Previous Material	Review	Theoretical Lecture	Quiz - Attendance
12	(2)Theoretical	The student understands the topic	Class Sporozoa Generally introduction of characteristic features of sporozoa. Life cycle in generally of Plasmodium spp. In man and insects.	Theoretical Lecture	Quiz - Attendance

13	(2)Theoretical	The student understands the topic	Plasmodium vivax Plasmodium ovale pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
14	(2)Theoretical	The student understands the topic	Plasmodium malariae Plasmodium falciparum pathogenicity, Lab. diagnosis and short notes of parasites Babesia spp. The defferentes in lab. diagnosis with Plasmodium spp.	Theoretical Lecture	Quiz - Attendance
15	2)Theoretical	The student understands the topic	Isosporia belli , Toxoplasma gondii Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance

Course Structure: Protozoa–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical		Information of parasitic Lab. diagnosis work , Collection of sample. Preservation and Fixatives solution.	Performing Practical Experiments	Quiz - Attendance
2	(4) Practical		General stool examination and preparation of Iodine, Eosin and saline solutions.	Performing Practical Experiments	Quiz - Attendance
3	(4) Practical		Entamoeba histolytica Permanent slides and stool examination.	Performing Practical Experiments	Quiz - Attendance
4	(4) Practical		Slides of Entamoeba gingivalis, Blastocystis hominis Entamoeba coli and stool examination for E. coli and Blastocystis hominis	Performing Practical Experiments	Quiz - Attendance
5	(4) Practical		Slides of Diantamoeba fragilis ,Iodamoeba butschlii ,Endolimax nana and stool examination .	Performing Practical Experiments	Quiz - Attendance
6	(4) Practical		Slides of Giardia lamblia ,Chilomastix mesnili stool examination	Performing Practical Experiments	Quiz - Attendance
7	(4) Practical		Trichomonas vaginalis , Trichomonas hominis , Trichomonas tenax slides Stool examination	Performing Practical Experiments	Quiz - Attendance
8	(4) Practical		Haemoflagellates Lishmania tropica (Lab. diagnosis) Lishmania donovani (Lab. diagnosis) sample of sand fly	Performing Practical Experiments	Quiz - Attendance
9	(4) Practical		Trypanosoma cruzi (slides) Trypanosoma brucei (slides) With sample of Tse – tse fly ,Reduviid bug	Performing Practical Experiments	Quiz - Attendance
10	(4) Practical		Slides of Blantidium coli Stool examination	Performing Practical Experiments	Quiz - Attendance
11	(4) Practical		Review , examination	Performing Practical Experiments	Quiz - Attendance
12	(4) Practical		Life cycle of Plasmodium spp. Sample Anopheline , preparation of blood film (Thick and thin blood film)	Performing Practical Experiments	Quiz - Attendance
13	(4) Practical		Slides of Plasmodium vivax , Plasmodium ovali . Slides of Plasmodium malariae , Plasmodium falciparum	Performing Practical Experiments	Quiz - Attendance
14	(4) Practical		Slides of Isospora belli , Toxoplasma gondii With lab. diagnosis Slides of Cryptosporidium spp. With lab. diagnosis	Performing Practical Experiments	Quiz - Attendance
15	(4) Practical		Review and examination	Performing Practical Experiments	Quiz - Attendance

1. Course Name:

Virology

2. Course Code:

MLT216-50-C

3. Semester / Year:

2025-2026/ First Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

90hours, 6 credits

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

Name: Assist. Lect. Zainab Hussein Mutighi

Email zainab.mutighi.iku@atu.edu.iq

8. Course Objectives

Course Objectives

- This course provides an introduction to key medical parasites, focusing on understanding their mechanisms of development and the factors leading to parasitic diseases. Students will learn about the most common parasitic diseases encountered in laboratories and how to classify parasites. A significant part of the course involves analyzing student results and comparing them with standard samples

9. Teaching and Learning Strategies

Strategy

- **Lectures:** Topics will be clarified and explained through detailed lectures.
- **Visual Aids:** Scientific materials will be presented using data projectors and display screens.
- **Self-Learning:** Students will engage in independent study by preparing reports in pathological case laboratories.
- **Problem-Solving:** Students will be equipped with fundamental and additional topics related to prior learning outcomes to solve practical problems.
- **Practical Application:** Theoretical concepts will be applied practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Text book of Medical Parasitology
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	

12. Course Structure: Virology– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(1)Theoretical	Understanding and knowing viruses and their types.	Introduction, General properties of virus, structure, classification of DNA & RNA viruses.	Theoretical Lecture	Oral and Practical Examinations
2	(1)Theoretical	Understanding the method of replication in viruses.	Replication of DNA and RNA virus	Theoretical Lecture	Oral and Practical Examinations
3	(1)Theoretical	The student identifies how to culture viruses in the lab.	Virus isolation & cultivation.	Theoretical Lecture	Oral and Practical Examinations
4	(1)Theoretical	The student acquires the necessary skills to understand how to use viruses in vaccines and chemical therapies.	Chemotherapy, antiviral agent & vaccines.	Theoretical Lecture	Oral and Practical Examinations
5	(1)Theoretical	Identifying Influenza.	Influenza viruses	Theoretical Lecture	Oral and Practical Examinations
6	(1)Theoretical	Identifying the Measles virus.	Paramyxo & Robella viruses.	Theoretical Lecture	Oral and Practical Examinations
7	(1)Theoretical		Enteric viruses, Rhinovirus group.	Theoretical Lecture	Oral and Practical Examinations
8	(1)Theoretical	Understanding the pathogenicity of viruses	Pathogenesis of viruses and Genetic of viruses	Theoretical Lecture	Oral and Practical Examinations
9	(1)Theoretical	Identifying the Herpes virus.	Herpes viruses	Theoretical Lecture	Oral and Practical Examinations
10	(1)Theoretical	Identifying and understanding cancer-causing viruses.	Oncogenic viruses	Theoretical Lecture	Oral and Practical Examinations
11	(1)Theoretical	Understanding and identifying Hepatitis viruses.	Hepatitis viruses	Theoretical Lecture	Oral and Practical Examinations
12	(1)Theoretical	Identifying and understanding the Rabies virus	Rabies & other neurotropic viruses	Theoretical Lecture	Oral and Practical Examinations
13	(1)Theoretical		Arbo viruses & viral haemorrhagic viruses	Theoretical Lecture	Oral and Practical Examinations
14	(1)Theoretical		Adeno, pox & parvo viruses	Theoretical Lecture	Oral and Practical Examinations
15	(1)Theoretical		Retro & Adis	Theoretical Lecture	Oral and Practical Examinations

Course Structure: Virology–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	(2) Practical	Understanding viruses in general.	Virus identification in general	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
2	(2) Practical	Understanding the equipment used in virology laboratories.	Equipments needed for virology lab.	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
3	(2) Practical	Understanding methods of culturing and isolating viruses.	Viral culture & isolation.	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
٤	(2) Practical	Understanding ELISA technique.	Elisa tests for viral identification	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
5-6	(2) Practical	Understanding PCR technique.	PCR	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
٧	(2) Practical	Understanding the electron microscope and its uses in the virology laboratory.	Electron microscope for virus identification	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
8-9	(2) Practical	Understanding how to extract viral DNA.	Viral DNA extraction	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
١٠	(2) Practical	Understanding viruses in general.	Viral RNA extraction	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
١١	(2) Practical	Understanding the equipment used in virology laboratories.	Detection by Neutralization test (Nt)	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
١٢	(2) Practical	Understanding methods of culturing and isolating viruses.	Detection by haemagglutination inhibition (HI)	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
١٣-14	(2) Practical	Understanding ELISA technique.	Serological diagnosis and Immunological detection of virus infection	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams
15	(2) Practical	Understanding PCR technique.	Review	Practical Lecture and Illustrative Film Viewing	Quizzes, midterm exams, and final exams

1. Course Name:

Medical Ethics

2. Course Code:

MLT217-50-C

3. Semester / Year:

2025-2026/ First Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical lectures, with Google Classroom integration.

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

30hours, 2 credits

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

Name: Lec. Dr. Mona Adel Ismail

Email: : mona.almontafaki@atu.edu.iq

8. Course Objectives

Course Objectives

This course aims to familiarize students with the fundamental ethics of professional conduct for individuals working in medical specializations. It also seeks to qualify graduates in professional behavior when engaging with their profession, enabling them to achieve harmony with themselves and their professional environment (patients, their companions, healthcare workers, and medical equipment)

9. Teaching and Learning Strategies

Strategy

- **Lectures:** Concepts will be clarified and explained through detailed lectures.
- **Visual Aids:** Scientific materials will be presented using data projectors and display screens.
- **Self-Learning:** Students will engage in independent study by preparing reports in pathological case laboratories.
- **Problem-Solving:** Students will be provided with fundamental and additional topics related to prior learning outcomes to solve practical problems.
- **Practical Application:** Theoretical concepts will be applied practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

The course grade will be out of 100, distributed according to tasks assigned to the student, such

as daily preparation, daily, oral, and monthly exams, written exams, reports, etc. The total grade will be divided into 30% for mid term and 70% for the final exam.

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	

12. Course Structure: Medical Ethics– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Principles of professional ethics in stages of civilizational development. Principles of professional ethics in Arab and Islamic civilization. Ethics of dealing with patients in hospitals from ancient times to the present.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
2	(2)Theoretical		Professional conduct: its definition - its concept - its practical applications - the relationship between employees and their superiors.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
3	(2)Theoretical		Basic ethics of the profession Characteristics of professional ethics as a guide and mentor for behavior. How to employ professional ethics from the position of guiding individual behavior, emotions, and the ability to make appropriate decisions. Characteristics and qualities of health care workers... appearance, behavior, and commitment. Moral and legal rights of the patient. Dealing according to the behavior of the patient and their companions.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
4	(2)Theoretical		Behavioral patterns: human - interactive - collective. Their definition, nature, motives, interpretations, and influencing factors	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
5	(2)Theoretical		Communication methods: verbal and non-verbal Their definition, types, effects, designing successful communication methods. How communication methods affect behavior, listening, and how to practice them with practical examples.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
6	(2)Theoretical		Behavioral attitudes and tendencies. Definition, classification, influencing factors, measurement methods.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
7	(2)Theoretical		Values, customs, and traditions. Definition, classification, influencing factors, measurement methods.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
8	(2)Theoretical		Personality types and how to deal with them. Definition of personality - its types - its relationship to the profession. The personality of the technician and its manifestations.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
9	(2)Theoretical		Conditions for improving mental health. Definition, influencing factors, prevention of mental illness, the role of mental health in professional preparation	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
10	(2)Theoretical		Conditions for professional compatibility and the related work relationship. Its concept, its conditions, professional incompatibility.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
11	(2)Theoretical		job description for the graduate's work	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
12	(2)Theoretical		Behavior of dealing with the patient. Receiving the patient, dealing with them, gaining their trust, and maintaining	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

			<p>professional secrets. Setting appointments for required procedures. Preserving patient belongings</p>		
13	(2)Theoretical		<p>Behavior of dealing with medical devices and equipment. Daily review of devices, tools, solutions, and other requirements, preparing them for daily work, maintaining and preserving them. Preparing necessary medications for work and proper disposal.</p>	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
14	(2)Theoretical		<p>Occupational safety. Prevention of work hazards and accidents. Prevention of bacterial, toxic, and radiation contamination hazards. Prevention of infectious and contagious disease hazards. Avoiding wrong practices in the workplace.</p>	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
15	(2)Theoretical		<p>Applications in professional conduct. Field visits to hospitals and other health institutions for observation, exchange of experience, and information.</p>	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

1. Course Name:

Crimes of the Ba'ath Regime

2. Course Code:

ATU24C

3. Semester / Year:

2025-2026/ First Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical lectures, with Google Classroom integration.

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

30hours, 2 credits

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

Name: Lect. Dr. Hussein Mustafa Rasool

Email: husein.rasool.iku@atu.edu.iq

8. Course Objectives

Course Objectives

This course aims for students to recognize the heinous crimes committed by the fallen Ba'ath regime against the Iraqi people during the era of the dictator and his henchmen.

9. Teaching and Learning Strategies

Strategy

- **Lectures: Explanation and clarification of topics through detailed lectures.**
- **Visual Aids: Presentation of scientific materials using data show projectors and display screens.**
- **Self-Learning: Students will engage in independent study by preparing reports in pathological case laboratories.**
- **Skill Enhancement: Providing students with foundational and additional topics related to prior skills to solve practical problems.**
- **Practical Application: Applying theoretical knowledge practically in various laboratories affiliated with teaching hospitals..**

10. Course Evaluation

The course grade will be out of 100, distributed according to tasks assigned to the student, such as daily preparation, daily, oral, and monthly exams, written exams, reports, etc. The total grade will be divided into 30% for mid term and 70% for the final exam.

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Crimes of the Ba'ath regime in Iraq.
Main references (sources)	
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	

12. Course Structure: Crimes of the Ba'ath Regime– Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-6	(2)Theoretical	Understanding the concept of crimes and their categories under dictatorial rule	Crimes of the Ba'ath regime according to the Iraqi Higher Criminal	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

			Court Law of 2005.		
7-10	(2)Theoretical	Understanding psychological crimes, their mechanisms, effects, and the militarization of society	Psychological and social crimes and their effects, and the most prominent violations of the Ba'athist regime in Iraq.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
11-12	(2)Theoretical	Understanding war pollution, radiation, and landmine explosions.	Environmental crimes of the Ba'ath regime in Iraq.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
13-15	(2)Theoretical	Understanding mass grave events and their chronological classification	Crimes of mass graves	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

Course Description Template - Second Stage – Second Semester

1. Course Name:

Bacterial pathogenicity

2. Course Code:

MLT221-50-C

3. Semester / Year:

2025-2026/ second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

90hours, 6 credits

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

Name: Assistant Lecturer Sura Abdulaziz Najim

Email Snajim@atu.edu.iq

8. Course Objectives

Course Objectives

- Provide the student with information enabling them to identify many of the basics of bacteriology first, then study the pathogenicity of each type and the medical importance of each. As a result, the student will be familiar with concepts of pathogenic bacteria and the pathogenicity of each bacterial type individually, as well as the types of toxins they produce. This will also enable the student to isolate pathogenic bacteria from various clinical samples and identify their type through colony morphology, colors, odor, biochemical characteristics, and staining properties.

9. Teaching and Learning Strategies

Strategy

- Explanation and clarification through lectures.
- Presenting scientific materials using data show projectors and display screens.
- Self-learning through preparing reports in laboratories of pathological cases.
- Providing students with basics and additional topics related to previous learning outcomes for skills, to solve practical problems.
- Applying theoretically studied topics practically in various laboratories affiliated with

	teaching hospitals.
10. Course Evaluation	
Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).	
11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Training Kits
Main references (sources)	Medical Bacteriology – Medical Microbiology
Recommended books and references (scientific journals, reports.)	3^{ed} edition \ microbiology and infectious diseases \ editor: Gabriel virella, M.D., Ph.D.
Electronic References, Websites	https://www.ncbi.nlm.nih.gov/pubmed/

12. Course Structure: Bacterial Pathogenicity– Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical	Understanding the subject and the ability to apply	Haemophilus , general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

		experiments correctly and record results			
2	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Enterobacteriaceae, general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
3	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	E.coli, general characteristic, lab diagnosis.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
4	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	klebsiella general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
5	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	proteus general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
6	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Salmonella and shigella general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
7	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	pseudomonas general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
8	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	vibrio general characteristic, lab diagnosis	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
9	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Sensitivity test and introduction to antibiotic	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
10	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Collection of clinical samples urine	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
11	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Collection of clinical samples stool	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
12	(2)Theoretical	Understanding the subject and the ability to apply experiments	Collection of clinical samples sputum	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

		correctly and record results			
13	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Collection of clinical samples Body fluid	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
14	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Collection of clinical samples blood	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
15	(2)Theoretical	Understanding the subject and the ability to apply experiments correctly and record results	Review	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

Course Structure: Bacterial pathogenicity–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Genus Staphylococcus General characters, Lab. diagnosis, coagulase test, catalase test.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
2	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Streptococcus General characters, Lab. diagnosis, sensitivity to bastracin. Treatment.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
3	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Genus Pneumococcus General characters, Lab. diagnosis, Optochin.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
4	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Corynebacterium: General characters, Lab. diagnosis, Elek test.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
5	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Mycobacterium: General characters, Lab. diagnosis, Z.N. stain, petroffs method.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
6	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Genus Bacillus General characters, spore forming, aerobic.Lab. diagnosis.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
7	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Clostridium: General characters, spore forming, anaerobic. Lab. diagnosis, macintosh jar.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
8	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Neisseriae: General characters, oxidase test, Lab. diagnosis, growth requirements.	Practical Lecture and Student Experimentation	
9	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Haemophilus: General characters, X and V factors, Lab. diagnosis, satellitism phenomena.	Practical Lecture and Student Experimentation	
10	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Family Enterobacteriaceae General characters, G ve- Bacilli, Imvic test. Types of culture media.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
11	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	E.coli General characters, lactose fermenter. Lab. diagnosis.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
12	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Klebsiella General characters. Lab. diagnosis, lactose fermenter, Imvic test.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
13	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Proteus General characters. Lab. diagnosis, non-lactose fermenter , Classification of species.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
14	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Salmonella and Shigella General characters. Lab. diagnosis.	Practical Lecture and Student Experimentation	
15	(4) Practical	Understanding the subject and the ability to apply experiments correctly and record results	Pseudomonas: General character Lab. diagnosis, types of pigments, oxidase test. Vibrio General characters. Lab. diagnosis.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams

1. Course Name:

Hematology 2

2. Course Code:

MLT222-50-C

3. Semester / Year:

2025-2026/ second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

90hours, 6 credits

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

Name: Assistant Lecturer Haqi Abdul Abbas Issa

Email : kin.hkee@atu.edu.iq

8. Course Objectives

Course Objectives

- A comprehensive understanding of the fundamentals of hematology and blood tests, including how to perform them with high technical precision to achieve accurate results. They'll also learn about the components and functions of blood, how the body resists diseases, and how oxygen is delivered to body parts. Students will be proficient in operating laboratory equipment and handling blood samples received in the hematology lab.
- Knowledge of the history of hematology and blood diseases, emphasizing the importance of a strong and healthy body in resisting various illnesses, especially during childhood and old age. They'll also understand how different blood components develop and how coagulation occurs in response to bleeding.

9. Teaching and Learning Strategies

Strategy

- Providing explanations and clarifications.
- Presenting scientific material using data show projectors and display screens.
- Preparing reports in pathology laboratories.
- Equipping students with foundational and supplementary topics related to prior learning outcomes and skills to tackle practical problems.
- Applying theoretical knowledge in various laboratories within teaching hospitals

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Basic of hematology: Functions And Disorders Of The blood System
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	Pubmed (NCBI database) Google scholar

12. Course Structure: Hematology 2– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Haemostasis , definition and types	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

			.The role of blood Vessels and Platelet in Haemostasis.		
2	(2)Theoretical		Coagulation factors, name and figures.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
3	(2)Theoretical		Coagulative Processes.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
4	(2)Theoretical		Haemostasis disorder types. Haemostasis due to blood vessels disorder.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
5	(2)Theoretical		Haemostasis due to blood platelet disorder.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
6	(2)Theoretical		Haemostasis due to Coagulative disorder.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
7	(2)Theoretical		The White blood Cells, types.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
8	(2)Theoretical		The maturation of W.B.C.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
9	(2)Theoretical		The function of W.B.C.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
10	(2)Theoretical		Leukocytosis.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
11	(2)Theoretical		Leukopenia.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
12	(2)Theoretical		Leukemia, definition and classification.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
13	(2)Theoretical		Chronic and acute myeloid. L.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
14	(2)Theoretical		Chronic and acute myeloid. L.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations
15	(2)Theoretical		Chronic and acute Monocytic .L.	Theoretical Lecture and In-Class Discussions	Daily, Monthly, and Final Examinations

Course Structure: Hematology 2–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	(4) Practical		Study the Clotting time.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
2	(4) Practical		Study the Hb. Electrophoresis.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
3	(4) Practical		Study the Plasma fibrinogen.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
٤	(4) Practical		Examination.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
5	(4) Practical		Study the total Count of the W.B.C.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
6	(4) Practical		Differential Count of W.B.C.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
7	(4) Practical		Count the eosinophil.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
8	(4) Practical		L.E Cell	Practical Lecture and Student Experimentation	
9	(4) Practical		Examination.	Practical Lecture and Student Experimentation	
١٠	(4) Practical		W.B.C Series.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
١١	(4) Practical		Study the Leukemia.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
١٢	(4) Practical		Study the Myeloid. L.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
١٣	(4) Practical		Study the Lymphatic. L.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
14	(4) Practical		Study the monocytic . L.	Practical Lecture and Student Experimentation	
15	(4) Practical		Use the Peroxides test for differential diagnosis.	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams

1. Course Name:

Clinical Chemistry 2

2. Course Code:

MLT223-50-C

3. Semester / Year:

2025-2026, second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

90hours, 6 credits

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

Name: Lect. Dr. Eatmad Abed Ali abed Ulrhman

Email Eatmar.alshawi@atu.edu.iq

8. Course Objectives

Course Objectives

- This outlines a course that introduces metabolic diseases and their diagnosis through clinical chemistry analyses. It's a continuation of a previous course, likely "Clinical Chemistry 1.

9. Teaching and Learning Strategies

Strategy

- Explanations and clarifications are provided through lectures.
- Scientific materials are displayed using data show projectors and screens.
- Students engage in self-learning by preparing reports in pathology laboratories.
- Students are given foundational and additional topics related to prior learning outcomes and skills to help them solve practical problems.
- Theoretical concepts are applied practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)	Clinical Chemistry and metabolism
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	AK Lecture

12. Course Structure: Clinical Chemistry 2– Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1-3	(2)Theoretical	Identify proteins in the human body and how they function in the body.	Protein metabolism and renal function 1-Serum Protein (components), 2- Amino acid metabolism, 3- fate of ammonia, 4- Urea cycle, urea metabolism and renal function tests	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
4-6	(2)Theoretical	Know and understand fats and their types and how they interact inside the body.	Lipid metabolism 1- fatty acids oxidation 2- ketone bodies Lipid profile and disorder in lipid profile (cholesterol, triglycerides, lipoproteins)	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
7	(2)Theoretical	Understand abnormalities in amino acids.	Disorders of purine and pyrimidine Uric acid metabolism (synthesis and hyperuricemia)	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
8	(2)Theoretical		Exam	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
9	(2)Theoretical	Identify enzymes and some of their types as examples of their function.	Introduction to enzyme (definition of enzymology) Creatin kinase CK (isoenzymes) Lactate dehydrogenase LDH (isoenzymes)	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
10-11	(2)Theoretical	Identify the functions of the liver and liver enzymes.	Liver function tests Bilirubin metabolism Jaundice (adult and neonatal jaundice) Hepatitis and liver function tests	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
12	(2)Theoretical	Identify markers that detect tumors in the human body.	Tumor markers	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations
13-15	(2)Theoretical	Understand and know hormones and how they function in the body	Hormones 1- Thyroid hormones (Thyroid function tests, parathyroid hormones) Fertility hormones (testosterone, luteinizing hormone, prolactin, follicular stimulating hormone)	Theoretical Lecture - Group Discussion Method	Daily, Monthly, and Final Examinations

Course Structure: Clinical Chemistry 2–Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	(4) Practical	Understand and identify blood sugar tests.	Glucose estimation, glucose tolerance test	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
2	(4) Practical	Understand and identify kidney function tests and evaluate kidney performance.	Renal function tests (urea in serum and urine) Serum creatinine and urine creatinine Measurement of glomerular filtration rate (creatinine clearance)	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
3	(4) Practical	Understand and identify protein analyses, including separation by electrophoresis.	Total protein estimation and protein electrophoresis	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
4	(4) Practical	Understand and identify protein analyses and how to collect 24-hour urine samples.	Albumin in serum and microalbumin (24hr urine albumin)	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
5	(4) Practical	Understand and identify lipid (fat) analyses.	Lipid profile (cholesterol and triglycerides estimation)	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
6	(4) Practical	Understand and identify analyses for gout.	HDL-cholesterol, LDL-cholesterol and VLDL	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
7	(4) Practical	Understand and identify analyses for jaundice in children.	Uric acid in serum and urine	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
8	(4) Practical	Understand and identify alkaline phosphatase enzyme tests.	Exam	Practical Lecture and Student Experimentation	
9	(4) Practical	Understand and identify liver enzyme tests.	Total Bilirubin (direct and indirect) Neonatal bilirubin estimation	Practical Lecture and Student Experimentation	
10	(4) Practical	Understand and identify hormone measurement devices.	Alkaline phosphatase estimation	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
11	(4) Practical	Understand and identify thyroid hormones.	Alanine aminotransferase ALT and Aspartate aminotransferase AST	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
12	(4) Practical	Understand and identify infertility and reproductive hormones.	Instruments used in hormones measurement (ELISA, RIA, VIDAS, ect...)	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
13	(4) Practical	Understand and identify blood sugar tests.	Thyroid function tests	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams
14	(4) Practical	Understand and identify kidney function tests and evaluate kidney performance.	Fertility hormones	Practical Lecture and Student Experimentation	
15	(4) Practical		Review and final exam	Practical Lecture and Student Experimentation	Quizzes, midterm exams, and final exams

1. Course Name:

Clinical Immunology 2

2. Course Code:

MLT224-50-C

3. Semester / Year:

2025-2026, second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration.

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

90hours, 6 credits

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

Name: Assist. Prof. Dr. Angham Najah Hadi

Email kin.angh22@atu.edu.iq

8. Course Objectives

Course Objectives

Upon completing this stage of study, students will:

- Possess a strong grasp of the fundamentals of immunology and serology, including immune tests and how to perform them with high technical proficiency to achieve accurate results. They will also learn about the components and functions of the immune system and how the body resists diseases. Students will be familiar with laboratory equipment and how to handle laboratory samples received in the serology or immunology lab.
- Understand the history of immunology and the importance of a strong and healthy human immune system in resisting various diseases, especially during childhood and old age. They will learn how different vaccines are developed by tracking cellular and humoral immune responses against various parasitic, bacterial, fungal, and viral pathogens, as well as exposure to the toxins produced by these pathogens.

9. Teaching and Learning Strategies

Strategy

- Lectures: Providing explanations and clarifications.
- Presenting scientific materials using data show projectors and display screens.
- Preparing reports in pathology laboratories.
- Equipping students with foundational and supplementary topics related to prior learning outcomes and skills to tackle practical problems.
- Applying theoretical knowledge in various laboratories within teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of Immunology and Serology
Main references (sources)	Basic Immunology: Functions And Disorders Of The Immune Abul K. Abbas
Recommended books and references (scientific journals, reports.)	Beat autoimmune
Electronic References, Websites	Pubmed(NCBI database), Science Direct, and Google scholar

12. Course Structure: Clinical Immunology 2– Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Introduction to autoimmune diseases, Rheumatic diseases and Rheumatoid arthritis	Theoretical Lecture	Questioning or Testing Students as Needed

2	(2)Theoretical		Systemic lupus erythematosus and Psoriatic arthritis	Theoretical Lecture	Questioning or Testing Students as Needed
3	(2)Theoretical		Ankylosing Spondylitis and Sjogren's syndrome	Theoretical Lecture	Questioning or Testing Students as Needed
4	(2)Theoretical		Behcet's disease	Theoretical Lecture	Questioning or Testing Students as Needed
5	(2)Theoretical		Gastrointestinal and liver diseases 1- Gluten sensitive entero-pathy 2- Ulcerative colitis 3- Crohn's disease	Theoretical Lecture	Questioning or Testing Students as Needed
6	(2)Theoretical		Pernicious anemia	Theoretical Lecture	Questioning or Testing Students as Needed
7	(2)Theoretical		Diabetes Mellitus Type I	Theoretical Lecture	Questioning or Testing Students as Needed
8	(2)Theoretical		Review	Theoretical Lecture	Questioning or Testing Students as Needed
9	(2)Theoretical		Autoimmune hepatitis diseases	Theoretical Lecture	Questioning or Testing Students as Needed
10	(2)Theoretical		Primary biliary cirrhosis and primary sclerosing cholangitis	Theoretical Lecture	Questioning or Testing Students as Needed
11	(2)Theoretical		Renal diseases 1- Circulating immune complex 2- In situ immune complex formation 3- Antineutrophil cytoplasmic autoantibodies and associated diseases	Theoretical Lecture	Questioning or Testing Students as Needed
12	(2)Theoretical		Respiratory disease 1- Drug-induced respiratory disease 2- Eosinophilic pneumonia 3- Asthma	Theoretical Lecture	Questioning or Testing Students as Needed
13	(2)Theoretical		Immunological thyroid disease and Immunological infertility	Theoretical Lecture	Questioning or Testing Students as Needed
14	(2)Theoretical		Tumor and Tumor markers	Theoretical Lecture	Questioning or Testing Students as Needed
15	(2)Theoretical		Graft versus host rejection and transplantation	Theoretical Lecture	Questioning or Testing Students as Needed

Course Structure: Clinical Immunology 2-Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical		Investigations that use to diagnose Immunological diseases	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams

2	(4) Practical		Precipitation reaction & ring test, Immuno diffusion test Ouden & ouchler long test The principle of test, reading the results, and reporting.	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams
3	(4) Practical		Single –radio immune diffusion test The partigen platen – concentration calculation of the antigens.	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams
ε	(4) Practical		Immuno – electrophoresis test.	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams
5	(4) Practical		Auto immune diseases R – factor test	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams
6	(4) Practical		Systemic lupus erythramatous test (SLE test).	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams
7	(4) Practical		Review	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams
8	(4) Practical		ASOT, Anti strptolysin O test normal value. And titration by tub method and micro titration.	Practical Lecture and Student Experiments	
9-14	(4) Practical		ELISA application in immunology	Practical Lecture and Student Experiments	
15	(4) Practical		Final exam	Practical Lecture and Student Experiments	Quizzes, midterm exams, and final exams

1. Course Name:

Helminthes

2. Course Code:

MLT225-50-C

3. Semester / Year:

2025-2026/ second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration.

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

90hours, 6 credits

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

Name: Lecturer. Dr Mona Adel Ismail

Email: mona.almontafaki@atu.edu.iq

8. Course Objectives

Course Objectives

- Definition and introduction to the most important medical parasites.
- Identifying the most important and common diseases in laboratories, understanding the mechanism of parasite development, understanding the factors that lead to parasitic infections, classifying parasites, analyzing the results obtained by students and comparing them with standard samples.

9. Teaching and Learning Strategies

Strategy

- Explanation and clarification through lectures.
- Presenting scientific materials using data show projectors and display screens.
- Self-learning by preparing reports in laboratories of pathological cases.
- Providing students with basics and additional topics related to previous learning outcomes for skills, to solve practical problems.
- Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)	Text book of Medical Parasitology
Recommended books and references (scientific journals, reports.)	
Electronic References, Websites	

12. Course Structure: Helminthes 2- Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical	The student understands the subject	Cryptosporidium spp. Morphology , life cycle , pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
2	(2)Theoretical	The student understands the subject	Review and examination (First one)	Theoretical Lecture	Quiz - Attendance

3	(2)Theoretical	The student understands the subject	In generally introduction of characteristic features of metazoa Helminthes (cestoda ,trematoda and nematoda)	Theoretical Lecture	Quiz - Attendance
4	(2)Theoretical	The student understands the subject	Class Cestoda Taenia saginata Taenia solium Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
5	(2)Theoretical	The student understands the subject	Hymenolepis nana Hymenolepis diminuta Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
6	(2)Theoretical	The student understands the subject	Echinococcus granulosus Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
7	(2)Theoretical	The student understands the subject	Class Trematoda In general life cycle of Schistosoma spp. Schistosoma haematobium Schistosoma mansoni Schistosoma japonicum Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
8	(2)Theoretical	The student understands the subject	Short notes of (liver flukes) Fasciola hepatica (Lung flukes) Fasciola buski (intestinal flukes) Heterophyes heterophes Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
9	(2)Theoretical	The student understands the subject	Class Nematode Ascaris lumbricoides Trichuris trichura Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
10	(2)Theoretical	The student understands the subject	Enterobius vermicularis Ancylostoma duodenale Necator americanus Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
11	(2)Theoretical	The student understands the subject	Larva migrans in human 1-cutaneous larva migrans Ancylostoma caninum Schistosoma sp. 2-subcutaneous larva migrans (scrow worm)(Myiasis) 3-visceral larva migrans Toxocara spp. pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
12	(2)Theoretical	The student understands the subject	Filaria Wuchereria bancrofti Loa loa Morphology ,life cycle ,pathogenicity, Lab. diagnosis	Theoretical Lecture	Quiz - Attendance
13	(2)Theoretical	The student understands the subject	Short notes of class Annelida Hirudo medicinalis in human morphology and lab. Diagnosis. And from metazoan Class Arthropoda Short notes of morphology and lab. diagnosis , some pathogenicity of 1-insect (Anopheline ,Sand fly ,Tse – tse fly ,Reduviid bug ,Culex , lice ,Fleas , Cimex) 2-Arachnids Mites , tick	Theoretical Lecture	Quiz - Attendance
14	(2)Theoretical	Review of previous material	Review	Theoretical Lecture	Quiz - Attendance

15	(2)Theoretical		Examination (second one) And Final examination	Theoretical Lecture	Quiz - Attendance
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Course Structure: Helminthes 2–Practical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(4) Practical		Slides of Taenia saginata ,Taenia solium With lab. diagnosis	Performing Practical Experiments	Quiz - Attendance
2	(4) Practical		Slides of Hymenolepis nana , Hymenolepis diminuta With lab. diagnosis	Performing Practical Experiments	Quiz - Attendance

3	(4) Practical		Slides of stages of Echinococcus granulosus With lab. diagnosis	Performing Practical Experiments	Quiz - Attendance
4	(4) Practical		Schistosoma haematobium Schistosoma mansoni Schistosoma japonicum Slides of stages and kind, sample of its snail.	Performing Practical Experiments	Quiz - Attendance
5	(4) Practical		Slides of Fasciola hepatica Fasciolopsis buski.	Performing Practical Experiments	Quiz - Attendance
6	(4) Practical		Slides of Heterophes heterophes stages	Performing Practical Experiments	Quiz - Attendance
7	(4) Practical		Ascaris lumbricoides Slides stages and lab. diagnosis	Performing Practical Experiments	Quiz - Attendance
8	(4) Practical		Enterobius vermicularis Slides (stages)	Performing Practical Experiments	Quiz - Attendance
9	(4) Practical		Ancylostoma duodenale slides (stages) Necator americanus slides (stages)	Performing Practical Experiments	Quiz - Attendance
10	(4) Practical		Larva migrans slides and picture	Performing Practical Experiments	Quiz - Attendance
11	(4) Practical		Filaria slides and pictures of Wuchereria bancrofti Loa-loa	Performing Practical Experiments	Quiz - Attendance
12	(4) Practical		Concentration methods hotation , sedimentation , special concen .(formal ether)	Performing Practical Experiments	Quiz - Attendance
13	(4) Practical		Slides or pictures of some arthropoda (Lice, Fleas, Scrow worm,....etc.)	Performing Practical Experiments	Quiz - Attendance
14	(4) Practical		Slides or pictures of some arthropoda (Cimex, Tick, Mites,etc.)	Performing Practical Experiments	Quiz - Attendance
15	(4) Practical		Review and examination and G.S.E exam.	Performing Practical Experiments	Quiz - Attendance

1. Course Name:

Medical Mycology

2. Course Code:

MLT226-50-C

3. Semester / Year:

2025-2026/ second Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration

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

45hours, 3 credits

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

Name: Assist. Lect. Zainab Hussein Mutighi

Email zainab.mutighi.iku@atu.edu.iq

8. Course Objectives

Course Objectives

- Students will be provided with the necessary information to identify different types of viruses that cause infections and learn about prevention methods.

9. Teaching and Learning Strategies

Strategy

-Lectures will be used for explanation and clarification.
-Scientific materials will be presented using data show projectors and display screens.
-Self-learning will be encouraged through the preparation of reports in pathological case laboratories.
-Students will be provided with foundational and additional topics related to prior learning outcomes and skills to help them solve practical problems.
-Theoretical knowledge will be applied practically in various laboratories affiliated with teaching hospitals.

10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbo
(curricular books, if any)

Educational Packages

Main references (sources)

Jawetz medical microbiology

Recommended books
and references

Practical microbiology

12. Course Structure: Medical Mycology- Theoretical and Practical

(scientific journals, reports...)	
Electronic Websites	Referenc

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(1)Theoretical, (2)Practical	Understand the basic introduction to fungi.	Introduction of Medical fungi	Theoretical and Practical Lectures	Daily, Monthly, Final exams
2	1)Theoretical, (2)Practical	Understood fungi, their structure, and their methods of reproduction.	Structure, reproduction and classification	Theoretical and Practical Lectures	Daily, Monthly, Final exams
3-4	1)Theoretical, (2)Practical	Understand the characteristics and types of mycoses.	Cultural characteristics, type of mycosis	Theoretical and Practical Lectures	Daily, Monthly, Final exams
5	1)Theoretical, (2)Practical	Identify the basics of treatment methods.	General principles in treatments	Theoretical and Practical Lectures	Daily, Monthly, Final exams
6-7	1)Theoretical, (2)Practical	Identify fungal types.	Actinomyces, Novartis, Myeloma	Theoretical and Practical Lectures	Daily, Monthly, Final exams
8	1)Theoretical, (2)Practical	Identify their types and basic characteristics.	Dermatophytes	Theoretical and Practical Lectures	Daily, Monthly, Final exams
9	1)Theoretical, (2)Practical	Know Candida and its characteristics.	Candidiasis	Theoretical and Practical Lectures	Daily, Monthly, Final exams
10	1)Theoretical, (2)Practical	Understand the topic.	Cytococccis	Theoretical and Practical Lectures	Daily, Monthly, Final exams
11	1)Theoretical, (2)Practical	Understand the topic.	Cryptococccis	Theoretical and Practical Lectures	Daily, Monthly, Final exams
12	1)Theoretical, (2)Practical	Understand the topic.	Histoplasmosis, sporotrichosis	Theoretical and Practical Lectures	Daily, Monthly, Final exams
13	1)Theoretical, (2)Practical	Study what relates to the mentioned types.	Miscellaneous fungi , Aspergillosis , mucor	Theoretical and Practical Lectures	Daily, Monthly, Final exams
14	1)Theoretical, (2)Practical	Understand the topic.	Rhizomes, penicillium	Theoretical and Practical Lectures	Daily, Monthly, Final exams
15	1)Theoretical, (2)Practical	Understand the topic and know the drugs extracted from fungi.	Antifungal agent , antibiotic produced by fungi	Theoretical and Practical Lectures	Daily, Monthly, Final exams

1. Course Name:

English Language

2. Course Code:

ATU20C

3. Semester / Year:

2025-2026/ second Semester

4. Description Preparation Date:

15/9/2025

5. Available Attendance Forms:

In-person theoretical lectures.

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

2hours, 2 credits

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

Name: Durgham Hussein Abbas Jabir (External Lecturer)

Email durghamha1980@gmail.com

8. Course Objectives

Course Objectives

- This course aims to introduce students to the fundamentals of English grammar and medical terminology.

9. Teaching and Learning Strategies

Strategy

Explanation and clarification through lectures.
Presentation of material using data show projectors and display screens.
Self-learning through preparing reports at the end of the semester.
Providing students with fundamentals and additional topics related to prior learning outcomes for skills.

10. Course Evaluation

The grade distribution out of 100 will be based on the tasks assigned to the student, such as daily preparation, daily and oral exams, monthly and written exams, and reports, etc. The semester grade will be 30, and the final grade will be 70.

11. Learning and Teaching Resources

12. Course Structure: English Language- Theoretical

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Defining the meaning of roots and suffixes added to the end of words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
2	(2)Theoretical		Introducing prefixes added to the beginning of words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
3	(2)Theoretical		Principles of reading medical terminology.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
4	(2)Theoretical		How to pronounce medical words correctly.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
5	(2)Theoretical		Identifying silent letters in words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
6	(2)Theoretical		How to pronounce the letter C in English.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
7	(2)Theoretical		How to pronounce the letter G in English.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
8	(2)Theoretical		Identifying the most important medical terms used between medical staff and patients.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
9	(2)Theoretical		Understanding some specific English grammar rules.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
10	(2)Theoretical		How to differentiate between singular and plural words.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
11	(2)Theoretical		A quiz on some terminology.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
12	(2)Theoretical		The twelve rules of plurality in medical terminology.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
13	(2)Theoretical		Review of past weeks.	Lecture Explanation + Student	Quizzes, midterm exams, and

				Discussion	final exams
14	(2)Theoretical		Using English grammar in medical writing.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams
15	(2)Theoretical		Comprehensive review.	Lecture Explanation + Student Discussion	Quizzes, midterm exams, and final exams

1. Course Name:

Arabic Language

2. Course Code:

ATU21C

3. Semester / Year:

2024-2025 /second Semester

4. Description Preparation Date:

10/9/2025

5. Available Attendance Forms:

In-person theoretical lectures.

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

30 theoretical hours, 2 credits

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

Name:

Email

8. Course Objectives

Course Objectives

- This course aims to qualify students to understand the fundamentals of the Arabic language and to use correct writing in official correspondence

9. Teaching and Learning Strategies

Strategy

- Explanation and clarification through lectures.
- Presentation of scientific materials using data show projectors and display screens.
- Self-learning through preparing reports.
- Providing students with fundamentals and additional topics related to prior learning outcomes for skills, to solve practical problems.

10. Course Evaluation

The grade distribution out of 100 will be based on the tasks assigned to the student, such as daily preparation, daily and oral exams, monthly and written exams, and reports, etc. The semester grade will be 30, and the final grade will be 70.

12. Course Structure: Arabic Language- Theoretical

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2)Theoretical		Introduction to Linguistic Errors – Taa Marbutah and Taa Maftouha.	Theoretical Lecture	Quizzes, midterm exams, and final exams
2	(2)Theoretical		Rules for writing Alif Maddudah and Alif Maqsurah – Solar and Lunar Letters.	Theoretical Lecture	Quizzes, midterm exams, and final exams
3	(2)Theoretical		Dhad and Zha.	Theoretical Lecture	Quizzes, midterm exams, and final exams
4	(2)Theoretical		Writing the Hamza.	Theoretical Lecture	Quizzes, midterm exams, and final exams
5	(2)Theoretical		Punctuation Marks.	Theoretical Lecture	Quizzes, midterm exams, and final exams
6	(2)Theoretical		Nouns and Verbs and differentiating between them.	Theoretical Lecture	Quizzes, midterm exams, and final exams
7	(2)Theoretical		Ma' eel (Objects/Complements).	Theoretical Lecture	Quizzes, midterm exams, and final exams
8	(2)Theoretical		Numbers.	Theoretical Lecture	Quizzes, midterm exams, and final exams
9 -10	(2)Theoretical		Applications of Common Linguistic Errors.	Theoretical Lecture	Quizzes, midterm exams, and final exams
11	(2)Theoretical		Noon and Tanween – Meanings of Prepositions.	Theoretical Lecture	Quizzes, midterm exams, and final exams
12	(2)Theoretical		Formal Aspects of Administrative Correspondence.	Theoretical Lecture	Quizzes, midterm exams, and final exams
13-14	(2)Theoretical		Language of Administrative Correspondence.	Theoretical Lecture	Quizzes, midterm exams, and final exams
15	(2)Theoretical		Samples of Administrative Correspondence.	Theoretical Lecture	Quizzes, midterm exams, and final exams

1. Course Name:

Computer applications

2. Course Code:

ATU22C

3. Semester / Year:

202^o-202¹ /Ssecond Semester

4. Description Preparation Date:

1^o/9/2025

5. Available Attendance Forms:

In-person theoretical and practical lectures, with Google Classroom integration.

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

3^o hours/first semester, 3 credits

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

Name: Assist. Prof. Hassanein Haider (External Lecturer)

Email hasanain.hayder@jmu.edu.iq

8. Course Objectives

Course Objectives

- students will be able to:
- Acquire practical skills and the ability to operate computer devices.
- Gain knowledge of network types and their fundamental components.
- Understand network threats.
- Identify key tools that help resolve and fix network errors.
- Understand concepts of online electronic banking services.
- Know about ATM services and how they function.
- Diagnose and troubleshoot computer errors.
- Identify important techniques for removing viruses and malware, and how to update operating system drivers.
- Acquire knowledge of Artificial Intelligence (AI) concepts, history, techniques, and methods.
- Understand the benefits of AI and the role of data in AI systems.
- Identify limitations and ethical considerations in AI systems.
- Recognize key mobile phone technologies that rely on AI, such as Siri and Alexa.
- Understand the future of AI in smartphone technology and the challenges of implementing it in mobile devices.
- Gain an overview of AI applications in various industries, including education, transportation, and media.
- Understand future trends in AI applications and tools.

12. Course Structure: Computer applications- Theoretical and Practical

- Identify the ethical implications of autonomous systems and ethics in AI-powered marketing and advertising.
- Recognize future trends in AI, recent research, and emerging technologies.

9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none">- Explanation and clarification of concepts through lectures.- Displaying scientific materials using data projectors and screens.- Preparing reports in clinical pathology laboratories.- Providing students with fundamental and additional topics related to previous learning outcomes for skills, to solve practical problems.- Applying theoretically studied topics practically in various laboratories affiliated with teaching hospitals.
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10. Course Evaluation

Grades are distributed out of 100 based on assigned student tasks such as daily preparation, daily, oral, monthly, and written exams, reports, etc. The total grade is divided into 40% for continuous assessment (15% practical + 25% theoretical) and 60% for the final exam (25% practical + 35% theoretical).

11. Learning and Teaching Resources

Required textbooks (curricular books if any)	There is no textbook
Main references (sources)	<ul style="list-style-type: none">• Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020).• Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology in Action Complete", 16th Edition (2020).• Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert.• Al-Khader Ali Al-Khader Bahath, "Fundamentals of Computer," 2016.• Ziyad, Ghassan, et al., "Fundamentals of Computer and Office Applications, Parts: One, Two, Three, Four," 2014.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Coursera ,Udemy https://support.microsoft.com/ar-sa/windows

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(1)Theoretical ,(2)Practical	- What is a network? Network Types: - By Connection Method: By Network Architectural Design: By Service Type: By Network Scope: Basic Network Components: Hardware Components Software Components Media	Security and Networking	Theoretical Explanation Supported by Presentation and Practical Application	Daily/oral/written exams and discussions
2	(1)Theoretical ,(2)Practical	-Network security fundamentals. Understanding network threats. Network troubleshooting. Common network problems and their symptoms. Network troubleshooting tools and software	Security and Networking	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
3	(1)Theoretical ,(2)Practical	Online banking. ATM services. Debit cards. Mobile banking. SMS banking. Electronic alerts. Telephone banking	E-Commerce	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
4	(1)Theoretical ,(2)Practical	Introduction to computer troubleshooting. Common hardware problems and their solutions. Diagnosing software problems.	Computer Troubleshooting	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
5	(1)Theoretical ,(2)Practical	Hardware components. Diagnosis and repair. Using safe mode for troubleshooting. Operating system troubleshooting.	Computer Troubleshooting	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
6	(1)Theoretical ,(2)Practical	Definition of Artificial Intelligence. History of Artificial Intelligence. Artificial Intelligence techniques and methods.	Introduction to AI	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
7	(1)Theoretical ,(2)Practical	Key characteristics of intelligence. Benefits of Artificial Intelligence (AI). Challenges and ethical considerations in AI.	Introduction to AI	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions
8	(1)Theoretical ,(2)Practical	Mobile phone technologies relying on AI. Virtual assistants, including: Siri Google Assistant Alexa Bixby	The Role of AI in Modern Smartphone	Theoretical explanation supported by presentations and practical application	Daily/oral/written exams and discussions

9	(1)Theoretical ,(2)Practical	Adaptive learning. Real-time translation services	The Role of AI in Modern Smartphone	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions
10	(1)Theoretical ,(2)Practical	Overview of AI Applications Across Industries Education Healthcare	Applications and Tools of AI	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions
11	(1)Theoretical ,(2)Practical	Transportation Marketing Advertising	Applications and Tools of AI	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions
12	(1)Theoretical ,(2)Practical	Finance Robotics Automation Technologies	Applications and Tools of AI	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions
13	(1)Theoretical ,(2)Practical	Societal Impact of AI Introduction to AI and its societal impact. The role of AI in enhancing public safety. Cultural perspectives on AI adoption	AI and Society	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions
14	(1)Theoretical ,(2)Practical	Ethics in AI Introduction to ethics in AI. Transparency and interpretability of AI systems. Ethics in AI-driven marketing and advertising	Ethical Challenges in AI	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions
15	(1)Theoretical ,(2)Practical	Future Trends in AI Future trends in Artificial Intelligence. Recent research and emerging technologies	The Future of AI	Theoretical explanation supported by presentations and practical application	Daily/oral/wri tten exams and discussions