



**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**

**2024/2025**



## **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: College of Health and Medical Techniques  
Scientific Department: Medical Laboratory Techniques  
Academic or Professional Program Name: Medical Laboratory Techniques  
Final Certificate Name: Medical Laboratory Techniques  
Academic System: Course and Yearly  
Description Preparation Date: 18/2/2025  
File Completion Date: 18/3/2025

Signature:

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Head of Department Name:

Dr. A.S.U. Hassun

Date: 18-3-2025

Signature:

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Scientific Associate Name:

Dr. Raad Ajam Sayle

Date: 18-3-2025

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

A handwritten signature in blue ink, appearing to be "F. Al-Sayid".  
18-3-2025A handwritten signature in green ink, appearing to be the signature of the Dean.  
Approval of the Dean



### **1. Program Vision**

The Department of Medical Laboratory Technologies is responsible for the main reason that society needs professional medical personnel for a variety of public health and educational institutions. In addition, sports athlete to invest the skills of professors and demand in applied scientific research and learning. Likewise, there is less training and a broad understanding of technical knowledge through specialized medical laboratories to suit development in the world of pathological analysis techniques.

### **2. Program Mission**

The Medical Laboratory Technology Department came to meet the needs of health institutions for professional cadres who have acquired skills and experience according to scientific and academic standards, by training these cadres to work in these institutions, as well as supporting the private sector in this regard. Developing teaching and student cadres in the fields of medical sciences and cognitive research, and striving to create postgraduate courses that prioritize the scientific balance of the department and other institutions, which works to consolidate the vision of scientific cooperation with other institutions, corresponding scientific departments and related institutions to achieve dedication in the fields of advanced science and technology.

### **3. Program Objectives**

The department seeks to achieve the following goals:-

1. Graduates acquire basic knowledge and skills in the fields of medical laboratory analytical techniques.
2. Selecting and preparing the materials required to conduct pathological analyses.
3. Use laboratory equipment with scientific and practical skills.
4. Identifying the causes of disease, whether these causes are bacterial, parasitic, fungal or viral, and acquiring the ability to investigate them.
5. Diagnosing genetic diseases and distinguishing them from acquired diseases.
6. Dealing with infectious and communicable disease cases and how to prevent them inside the laboratory by implementing occupational safety guidelines.
7. Familiarity with the human aspects of the patient, which is an important part of treatment.



#### 4. Program Accreditation

A detailed study was submitted to obtain accreditation, including a self-evaluation report, improvement plan, and conformity report.

#### 5. Other External Influences

I-Furat Al-Awsat Technical University.

#### 6. Program Structure

| Program Structure        | Number of Courses | Credit hours | Percentage | Reviews* |
|--------------------------|-------------------|--------------|------------|----------|
| Institution Requirements | 32                | 174          | 100%       |          |
| College Requirements     |                   |              |            |          |
| Department Requirements  | 32                | 174          | 100%       |          |
| Summer Training          | 2                 | Satisfied    | 100%       |          |
| Other                    |                   |              |            |          |

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

#### 7. Program Description

| Year/Level                          | Course Code  | Course Name              | Credit Hours |           |
|-------------------------------------|--------------|--------------------------|--------------|-----------|
|                                     |              |                          | Theoretical  | Practical |
| The first stage - the first course. | Atu_chmML111 | General chemistry 1      | 2            | 5         |
|                                     | Atu_chmML112 | Medical terminology      | 2            | --        |
|                                     | Atu_chmML113 | Human biology 1          | 2            | 5         |
|                                     | Atu_chmML114 | Laboratory instruments 1 | 2            | 4         |
|                                     | Atu_chmML115 | Medical ethics           | 2            | --        |
|                                     | Atu_chmML116 | Computer Applications 1  | 1            | 2         |
|                                     | Atu_chmML117 | Human rights             | 2            | --        |
|                                     | Atu_chmML118 | English language         | 2            | --        |
|                                     | Atu_chmML121 | General chemistry 2      | 2            | 5         |



|                                      |              |                                     |   |    |
|--------------------------------------|--------------|-------------------------------------|---|----|
| The first stage - the second course  | Atu_chmML121 | Anatomy                             | 2 | 5  |
|                                      | Atu_chmML123 | Human biology 2                     | 2 | 5  |
|                                      | Atu_chmML124 | Laboratory instruments 2            | 2 | 4  |
|                                      | Atu_chmML125 | Arabic language                     | 2 | -- |
| The second stage - the first course  | Atu_chmML211 | Medical Bacteriology1               | 2 | 4  |
|                                      | Atu_chmML212 | Biochemistry1                       | 2 | 4  |
|                                      | Atu_chmML213 | Human physiology1                   | 2 | 4  |
|                                      | Atu_chmML214 | Histology1                          | 2 | 4  |
|                                      | Atu_chmML215 | Molecular Biology1                  | 2 | 4  |
|                                      | Atu_chmML216 | Medical Parasitology1               | 2 | 4  |
|                                      | Atu_chmML217 | Crimes of the defunct Baath regime  | 2 | -- |
|                                      | Atu_chmML218 | Computer Applications 1             | 1 | 2  |
| The second stage - the second course | Atu_chmML221 | Medical Bacteriology2               | 2 | 4  |
|                                      | Atu_chmML222 | Biochemistry2                       | 2 | 4  |
|                                      | Atu_chmML223 | Human physiology2                   | 2 | 4  |
|                                      | Atu_chmML224 | Histology2                          | 2 | 4  |
|                                      | Atu_chmML225 | Medical Parasitology 2 & Entomology | 2 | 4  |
|                                      | Atu_chmML226 | Descriptive Biostatistics           | 1 | 2  |
|                                      | Atu_chmML227 | Arabic language                     | 2 | -  |
| The third stage - the first course   | Atu_chmML311 | Histopathology1                     | 2 | 2  |
|                                      | Atu_chmML312 | Hematology2                         | 2 | 2  |
|                                      | Atu_chmML313 | Medical Mycology                    | 2 | 4  |
|                                      | Atu_chmML314 | Metabolic Disorders                 | 2 | 4  |
|                                      | Atu_chmML315 | Medical Genetics1                   | 2 | 4  |
|                                      | Atu_chmML316 | Immunology1                         | 2 | 4  |
|                                      | Atu_chmML317 | Advanced Laboratory Techniques      | 2 | 2  |
|                                      | Atu_chmML318 | Computer Applications1              | 1 | 2  |
| The third stage - the second course  | Atu_chmML321 | Histopathology2                     | 2 | 2  |
|                                      | Atu_chmML322 | Hematology 2                        | 2 | 2  |
|                                      | Atu_chmML323 | Medical Virology                    | 2 | 4  |
|                                      | Atu_chmML324 | Endocrinology (Clinical)            | 2 | 4  |
|                                      | Atu_chmML325 | Medical Genetics 2                  | 2 | 4  |
|                                      | Atu_chmML326 | Immunology 2                        | 2 | 4  |
|                                      | Atu_chmML327 | Analytical Biostatistics            | 1 | 2  |
|                                      | Atu_chmML328 | Computer Applications 2             | 1 | 2  |



|                              |              |                                                      |    |    |
|------------------------------|--------------|------------------------------------------------------|----|----|
| The fourth stage -<br>Annual | Atu_chmML411 | Clinical Immunology                                  | 2  | 4  |
|                              | Atu_chmML412 | Diagnostic Bacteriology                              | 2  | 4  |
|                              | Atu_chmML413 | Clinical Chemistry                                   | 2  | 4  |
|                              | Atu_chmML414 | Medical Parasitology                                 | 2  | 4  |
|                              | Atu_chmML415 | Blood Transfusion                                    | 2  | 4  |
|                              | Atu_chmML416 | Histopathology                                       | 2  | 4  |
|                              | Atu_chmML417 | Laboratory Management + Research<br>Methods Teaching | 2  | -- |
|                              | Atu_chmML418 | Graduation Project                                   | -- | 5  |

\* Notes may include whether the course is core or optional.



## 8. Expected learning outcomes of the program

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A-Knowledge Outcomes.</b> | <p><b>A1</b> – Demonstrates comprehensive knowledge of the theoretical foundations of microbiology, clinical chemistry, hematology, immunology, and parasitology.</p> <p><b>A2</b> – Differentiates among various laboratory testing techniques, recognizing their specific diagnostic purposes.</p> <p><b>A3</b> – Accurately outlines the procedures and protocols for the collection and analysis of biological samples in accordance with scientific standards.</p> <p><b>A4</b> – Interprets the correlation between laboratory test results and corresponding clinical conditions.</p> <p><b>A5</b> – Defines and applies quality assurance principles and performance control measures within medical laboratories.</p> <p><b>A6</b> – Identifies the normal functions of human body organs and explains their relevance to laboratory testing.</p> <p><b>A7</b> – Operates and maintains advanced laboratory equipment with proficiency.</p> |
| <b>B- Skill Outcomes.</b>    | <p><b>B1</b> – Performs blood and other body fluid analyses with high accuracy.</p> <p><b>B2</b> – Operates laboratory analysis equipment with technical proficiency.</p> <p><b>B3</b> – Prepares slides and laboratory assays, and effectively uses microscopes.</p> <p><b>B4</b> – Calibrates laboratory solutions and applies chemical analysis methods with precision.</p> <p><b>B5</b> – Handles and processes biological samples in compliance with safety protocols.</p> <p><b>B6</b> – Accurately documents laboratory findings and prepares comprehensive reports.</p> <p><b>B7</b> – Adheres to safety and security regulations, infection control measures, and patient care protocols.</p>                                                                                                                                                                                                                                               |



**C-Valuable  
Outcomes.**

- C1** – Adheres to professional ethics, maintaining confidentiality, accuracy, and respect for patient privacy.
- C2** – Demonstrates professional accountability and complies with established health regulations and guidelines.
- C3** – Respects cultural, religious, and social diversity within the workplace.
- C4** – Collaborates effectively as part of a medical team, fostering a spirit of cooperation.
- C5** – Engages in continuous learning and professional development to remain current with advances in medical laboratory technology.
- C6** – Exercises professional integrity and diligence when interpreting laboratory results.
- C7** – Takes responsibility for training and mentoring new staff within the field.

**9-Teaching and Learning Strategies:**

Blended education, which consists of in-person education, including classrooms with smart screens and specialized educational laboratories according to academic academic subjects, in addition to electronic communication with students for the purpose of assigning some assignments and instructions.

**10-Evaluation methods:**

Implemented in all stages of the program in general.  
Theoretical and practical (clinical) exams, rapid exams, and classroom activities.



| NO. | Academic Rank                               | Specialization              | Faculty Members Count      | Staff                 | Lecturer |
|-----|---------------------------------------------|-----------------------------|----------------------------|-----------------------|----------|
|     |                                             | General                     | Special                    |                       |          |
| 1.  | Prof. Dr. Angham Jasim Mohammed Ali         | Life Sciences               | Immunology                 | Dean                  | Yes      |
| 2.  | Prof. Dr. Abdul Samad Alawi Hassan          | Life Sciences               | Physiology                 | Head of Department    | Yes      |
| 3.  | Prof. Dr. Imad Abbas Jaafar Al-Alaa         | Chemistry Sciences          | Organic Chemistry          | Lecturer              | Yes      |
| 4.  | Prof. Dr. Kazem Mohammed Sabea              | Life Sciences               | Physiology                 | Lecturer              | Yes      |
| 5.  | Assist. Prof. Dr. Raad Ajm Sael             | Microbiology                | Medical Parasitology       | Assistant Dean        | Yes      |
| 6.  | Dr. Aqeel Abdul Azeem Jawad                 | Life Sciences               | Microbiology               | Department Rapporteur | Yes      |
| 7.  | Assist. Prof. Dr. Radhiya Fadel Hussein     | Medical Analysis Technology | Immunology                 | Lecturer              | Yes      |
| 8.  | Assist. Prof. Dr. Zahraa Hamid Ouda         | Microbiology                | Analytical Sciences        | Lecturer              | Yes      |
| 9.  | Assist. Prof. Dr. Ali Mohammed Abdul Hamoud | Chemistry Sciences          | Clinical Biochemistry      | Lecturer              | Yes      |
| 10. | Assist. Prof. Dr. Mohammed Abdul Mahdi      | Engineering                 | Communications Engineering | Lecturer              | Yes      |
| 11. | Assist. Prof. Najat Mohammed Qailah         | Analytical Sciences         | Genetics                   | Lecturer              | Yes      |
| 12. | Dr. Athmar Ali Kazem                        | Chemistry Education         | Inorganic Chemistry        | Lecturer              | Yes      |
| 13. | Dr. Ruaa Kareem Sarhan                      | Life Sciences               | Immunology                 | Lecturer              | Yes      |
| 14. | Dr. Ruaa Mohammed Hussein                   | Life Sciences Education     | Virology                   | Lecturer              | Yes      |
| 15. | Assist. Prof. Dr. Zahraa Basim Shakir       | Life Sciences               | Microbiology               | Lecturer              | Yes      |
| 16. | Dr. Fahd Dakhel Fahd                        | Chemistry Sciences          | Physical Chemistry         | Lecturer              | Yes      |
| 17. | Assist. Prof. Dr. Qais Khudair Abdul Abbas  | Life Sciences               | Microbiology               | Lecturer              | Yes      |
| 18. | Assist. Lecturer Ahmed Taklif Tali          | Computer Science            | Computer Science           | Lecturer              | Yes      |
| 19. | Assist. Lecturer Ahmed Abdul Redha          | Life Sciences               | Microbiology               | Lecturer              | Yes      |
| 20. | Assist. Lecturer Ashwaq Habib Mashkhoul     | English Language Arts       | English Language           | Lecturer              | Yes      |
| 21. | Assist. Lecturer Enas                       | Life Sciences               | 12 Microbiology            | Lecturer              | Yes      |



| NO. | Academic Rank                             | Specialization              | Faculty Members Count | Staff    | Lecturer |
|-----|-------------------------------------------|-----------------------------|-----------------------|----------|----------|
|     |                                           | General                     | Special               |          |          |
|     | Kazem Abdul Ameer                         |                             |                       |          |          |
| 22. | Assist. Lecturer Jenan Kareem Issa        | Life Sciences Education     | Mycology              | Lecturer | Yes      |
| 23. | Assist. Lecturer Hussein Sattar Rabat     | Life Sciences               | Microbiology          | Lecturer | Yes      |
| 24. | Assist. Lecturer Haneen Hussein Mohammed  | Life Sciences               | Histology             | Lecturer | Yes      |
| 25. | Assist. Lecturer Hooria Saeed Ibrahim     | Chemistry Sciences          | Inorganic Chemistry   | Lecturer | Yes      |
| 26. | Assist. Lecturer Duha Abdul Zahra Ali     | Life Sciences               | Physiology            | Lecturer | Yes      |
| 27. | Assist. Lecturer Zahraa Falah Abdul Aali  | Life Sciences               | Physiology            | Lecturer | Yes      |
| 28. | Assist. Lecturer Zahraa Hussein Kazem     | Life Sciences               | Physiology            | Lecturer | Yes      |
| 29. | Assist. Lecturer Zahraa Hamza Abdul Zahra | Chemistry Sciences          | Biochemistry          | Lecturer | Yes      |
| 30. | Assist. Lecturer Abbas Hussein Obeid      | Veterinary Medicine         | Histopathology        | Lecturer | Yes      |
| 31. | Assist. Lecturer Sarah Ali Hamid          | Medical Analysis Technology | Parasitology          | Lecturer | Yes      |
| 32. | Assist. Lecturer Safa Khalid Aziz         | Life Sciences               | Parasitology          | Lecturer | Yes      |



## **Professional Development**

### **Mentoring new faculty members**

Adherence to official working hours. - Adherence to the timings of lectures, exams, and the course of the educational process. - Encouraging the completion of scientific research. - Follow up on the progress of lectures and completion rates for lectures. - Conduct a self-report assessment. Professional development of faculty m

### **Professional development of faculty members**

- Carrying out various scientific activities (seminars, courses, discussion groups, etc.).
- Participation in scientific conferences.
- Participation in scientific activities related to continuing education.

## **1- Acceptance Criterion**

The admission plan for the Department of Medical Laboratory Technology is 100 morning students and 100 evening students.

## **The most important sources of information about the program**

The official website of the college and university.

## **Program Development Plan**

1. Conduct periodic reviews of all courses to ensure content relevance and alignment with program objectives.
2. Prepare annual course reports, including clearly defined development plans for each course.
3. Implement an internal and external evaluation system to assess and enhance program quality.
4. Ensure active involvement of program stakeholders and beneficiaries in the program's development process.
5. Organize educational workshops and advanced practical training courses to strengthen applied skills.
6. Schedule structured summer training sessions to develop students' technical and professional competencies.



# Curriculum Skills Map

## Required learning outcomes of the program

| Year/<br>Level                              | Course<br>Code   | Course<br>Name              | Essential<br>or<br>Optional | Cognitive objectives |    |    |    |    |    |    | Program skill objectives |    |    |    |    |    |    | Emotional and value goals |    |    |    |    |    |    |
|---------------------------------------------|------------------|-----------------------------|-----------------------------|----------------------|----|----|----|----|----|----|--------------------------|----|----|----|----|----|----|---------------------------|----|----|----|----|----|----|
|                                             |                  |                             |                             | A1                   | A2 | A3 | A4 | A5 | A6 | A7 | B1                       | B2 | B3 | B4 | B5 | B6 | B7 | C1                        | C2 | C3 | C4 | C5 | C6 | C7 |
| The<br>first<br>stage -<br>first<br>course. | Atu_chmML<br>111 | General<br>Chemistry 1      | Essential                   | √                    | √  |    | √  | √  |    |    | √                        |    |    | √  |    |    | √  |                           |    |    | √  |    |    |    |
|                                             | Atu_chmML<br>112 | Medical<br>Terminology      | Essential                   |                      |    |    | √  |    |    |    |                          | √  |    |    |    |    |    |                           |    |    |    | √  |    | √  |
|                                             | Atu_chmML<br>113 | Human<br>Biology 1          | Essential                   | √                    | √  | √  | √  | √  | √  |    | √                        |    |    |    | √  |    | √  |                           | √  |    |    | √  | √  |    |
|                                             | Atu_chmML<br>114 | Laboratory<br>Instruments 1 | Essential                   | √                    | √  |    |    | √  |    | √  |                          | √  | √  | √  |    |    |    |                           |    |    |    | √  |    |    |
|                                             | Atu_chmML<br>115 | Medical Ethics              | Optional                    |                      |    |    |    |    |    |    |                          |    |    |    | √  | √  | √  | √                         | √  | √  | √  | √  | √  |    |
|                                             | Atu_chmML<br>116 | Computer<br>Applications 1  | Optional                    |                      |    |    |    |    |    | √  |                          | √  |    |    |    | √  |    |                           |    |    |    | √  |    |    |
|                                             | Atu_chmML<br>117 | Human Rights                | Optional                    |                      |    |    |    |    |    |    |                          |    |    |    |    |    | √  | √                         | √  | √  |    | √  | √  |    |
|                                             | Atu_chmML<br>118 | English<br>Language         | Optional                    |                      |    |    |    |    |    |    | √                        | √  |    | √  |    |    | √  |                           | √  | √  |    | √  |    |    |
| The<br>first<br>stage -<br>the<br>second    | Atu_chmML<br>121 | General<br>Chemistry 2      | Essential                   | √                    | √  |    | √  | √  |    |    | √                        |    |    | √  |    |    | √  |                           |    |    |    |    |    |    |
|                                             | Atu_chmML<br>122 | Anatomy                     | Essential                   | √                    | √  |    | √  |    |    |    |                          |    |    |    |    |    |    |                           |    |    | √  |    |    |    |
|                                             | Atu_chmML<br>123 | Human biology<br>2          | Essential                   | √                    | √  | √  | √  | √  | √  |    | √                        |    | √  |    | √  |    | √  |                           |    | √  |    |    | √  |    |





|                                                     | Atu_chmML<br>225 | Medical<br>Parasitology 2<br>& Entomology | Essential                   | √                    | √  | √  | √  | √  | √  |    | √                        |    | √  |    | √  | √  | √  |                           |    |    |    | √  | √  |    |
|-----------------------------------------------------|------------------|-------------------------------------------|-----------------------------|----------------------|----|----|----|----|----|----|--------------------------|----|----|----|----|----|----|---------------------------|----|----|----|----|----|----|
|                                                     | Atu_chmML<br>226 | Descriptive<br>Biostatistics              | Optional                    |                      |    |    | √  |    |    |    | √                        |    |    |    |    | √  |    |                           |    |    | √  | √  |    |    |
|                                                     | Atu_chmML<br>227 | Arabic<br>language                        |                             |                      |    |    |    |    |    |    |                          |    |    |    |    |    |    |                           |    |    |    |    |    |    |
| Year/<br>Level                                      | Course<br>Code   | Course<br>Name                            | Essential<br>or<br>Optional | Cognitive objectives |    |    |    |    |    |    | Program skill objectives |    |    |    |    |    |    | Emotional and value goals |    |    |    |    |    |    |
|                                                     |                  |                                           |                             | A1                   | A2 | A3 | A4 | A5 | A6 | A7 | B1                       | B2 | B3 | B4 | B5 | B6 | B7 | C1                        | C2 | C3 | C4 | C5 | C6 | C7 |
| The<br>third<br>stage -<br>the<br>first<br>course.  | Atu_chmML<br>311 | Histopathology I                          | Essential                   | √                    | √  | √  | √  |    |    |    | √                        |    | √  |    | √  | √  | √  |                           | √  |    | √  | √  | √  |    |
|                                                     | Atu_chmML<br>312 | Hematology                                | Essential                   | √                    | √  | √  | √  |    |    |    | √                        |    | √  |    | √  | √  | √  |                           | √  |    |    | √  | √  |    |
|                                                     | Atu_chmML<br>313 | Medical<br>Mycology                       | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    | √  |    | √  |    | √  |                           |    |    |    | √  | √  |    |
|                                                     | Atu_chmML<br>314 | Metabolic<br>Disorders                    | Essential                   | √                    | √  |    | √  |    |    |    |                          |    |    |    |    |    |    |                           |    |    |    |    |    |    |
|                                                     | Atu_chmML<br>315 | Medical<br>Genetics                       | Essential                   | √                    | √  |    | √  |    |    |    | √                        |    |    |    |    |    |    |                           |    |    |    | √  | √  |    |
|                                                     | Atu_chmML<br>316 | Immunology                                | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    |    |    |    | √  | √  |                           |    |    |    | √  | √  |    |
|                                                     | Atu_chmML<br>317 | Advanced<br>Laboratory<br>Techniques      | Essential                   |                      | √  | √  |    |    | √  | √  | √                        | √  | √  | √  |    |    |    |                           |    |    |    | √  | √  |    |
|                                                     | Atu_chmML<br>318 | Computer<br>Applications                  | Optional                    |                      |    |    |    |    |    |    | √                        | √  |    |    |    | √  |    |                           |    |    |    | √  |    |    |
| The<br>third<br>stage -<br>the<br>second<br>course. | Atu_chmML<br>321 | Histopathology                            | Essential                   | √                    | √  | √  | √  |    |    |    | √                        |    | √  |    | √  | √  | √  |                           |    |    | √  | √  | √  |    |
|                                                     | Atu_chmML<br>322 | Hematology 2                              | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    | √  |    | √  | √  | √  |                           |    |    | √  | √  |    |    |
|                                                     | Atu_chmML<br>323 | Medical<br>Virology                       | Essential                   | √                    | √  | √  | √  |    |    |    | √                        |    |    |    | √  | √  | √  |                           |    |    | √  | √  |    |    |
|                                                     | Atu_chmML<br>324 | Endocrinology                             | Essential                   | √                    | √  |    | √  |    |    |    | √                        |    |    |    |    | √  |    |                           |    |    |    | √  |    |    |



|                                     | Atu_chmML<br>325 | Medical Genetics 2                                | Essential                   | √                    | √  |    | √  |    |    |    | √                        |    |    |    |    | √  | √  |                           |    |    |    | √  | √  |    |  |
|-------------------------------------|------------------|---------------------------------------------------|-----------------------------|----------------------|----|----|----|----|----|----|--------------------------|----|----|----|----|----|----|---------------------------|----|----|----|----|----|----|--|
|                                     | Atu_chmML<br>326 | Immunology 2                                      | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    |    |    |    | √  | √  |                           |    |    |    |    |    |    |  |
|                                     | Atu_chmML<br>327 | Analytical Biostatistics                          | Optional                    |                      |    |    | √  | √  |    |    | √                        |    |    | √  |    | √  |    |                           |    |    | √  | √  |    |    |  |
|                                     | Atu_chmML<br>328 | Computer Applications 2                           | Optional                    |                      |    |    |    | √  |    |    | √                        | √  |    | √  |    |    |    |                           |    |    |    | √  |    |    |  |
| Year/<br>Level                      | Course Code      | Course Name                                       | Essential<br>or<br>Optional | Cognitive objectives |    |    |    |    |    |    | Program skill objectives |    |    |    |    |    |    | Emotional and value goals |    |    |    |    |    |    |  |
|                                     |                  |                                                   |                             | A1                   | A2 | A3 | A4 | A5 | A6 | A7 | B1                       | B2 | B3 | B4 | B5 | B6 | B7 | C1                        | C2 | C3 | C4 | C5 | C6 | C7 |  |
| The<br>fourth<br>year /<br>annually | Atu_chmML<br>411 | Clinical Immunology                               | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    |    |    |    | √  | √  |                           |    |    |    | √  | √  |    |  |
|                                     | Atu_chmML<br>412 | Diagnostic Bacteriology                           | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    |    |    | √  | √  | √  |                           |    |    |    | √  | √  |    |  |
|                                     | Atu_chmML<br>413 | Clinical Chemistry                                | Essential                   | √                    | √  |    | √  | √  |    |    | √                        |    |    |    |    | √  | √  |                           |    |    |    | √  | √  |    |  |
|                                     | Atu_chmML<br>414 | Medical Parasitology                              | Essential                   | √                    | √  | √  | √  |    | √  |    | √                        |    | √  |    | √  | √  | √  |                           |    |    |    | √  | √  |    |  |
|                                     | Atu_chmML<br>415 | Blood Transfusion                                 | Essential                   | √                    | √  | √  | √  |    |    |    | √                        |    | √  |    | √  | √  | √  |                           |    |    | √  | √  |    |    |  |
|                                     | Atu_chmML<br>416 | Histopathology                                    | Essential                   | √                    | √  | √  | √  |    |    |    | √                        |    | √  |    | √  | √  | √  |                           |    |    |    | √  | √  |    |  |
|                                     | Atu_chmML<br>417 | Laboratory Management + Research Methods Teaching | Essential                   |                      |    |    |    | √  |    |    |                          | √  |    |    |    |    | √  | √                         | √  | √  | √  | √  | √  |    |  |
|                                     | Atu_chmML<br>418 | Graduation Project                                | Essential                   |                      |    |    |    | √  |    | √  | √                        |    |    |    |    | √  | √  | √                         |    |    |    |    | √  |    |  |

# **First Stage**



## Course Description Form

|                                                                                                                        |                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                                                                        |                                                                                                                                                                         |
| general chemistry                                                                                                      |                                                                                                                                                                         |
| 2. Course Code:                                                                                                        |                                                                                                                                                                         |
| Atu_chmML111 + Atu_chmML121                                                                                            |                                                                                                                                                                         |
| 3. Semester: :                                                                                                         |                                                                                                                                                                         |
| first stage / 2024-2025                                                                                                |                                                                                                                                                                         |
| 4. Description Preparation Date:                                                                                       |                                                                                                                                                                         |
| 18/ 8/2025                                                                                                             |                                                                                                                                                                         |
| 5. Available Attendance Forms:                                                                                         |                                                                                                                                                                         |
|                                                                                                                        |                                                                                                                                                                         |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                                            |                                                                                                                                                                         |
| 7/4                                                                                                                    |                                                                                                                                                                         |
| 7. Course administrator's name (mention all, if more than one name)                                                    |                                                                                                                                                                         |
| Name: Hawraa. Saeed. Ibrahim.<br>Email: <a href="mailto:hawra.ibrahim.ckm@atu.edu.iq">hawra.ibrahim.ckm@atu.edu.iq</a> |                                                                                                                                                                         |
| 8. Course Objectives                                                                                                   |                                                                                                                                                                         |
| Course Objectives                                                                                                      | <b>First: The student learns about the chemistry lab in general. Learn how to conduct organic chemical reactions and prepare standard solutions and concentrations.</b> |



### Secondly: Skill-based Objectives

- 1- The student learns how to work in the laboratory and take precautions and warnings when handling chemicals.
- 2- How to use laboratory equipment and prepare solutions.

### 9. Teaching and Learning Strategies

|                 |                                                                                                                                                                                                                                            |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategy</b> | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 10. Course Structure

| No.                | Hours | Required Learning Outcomes                                                                                                                                                                                                | Unit or subject name      | Learning method                                                                                                                                                                                                                            | Evaluation method                                                                                                            |
|--------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>First week</b>  | 2     | <ul style="list-style-type: none"> <li>• Understanding matter</li> <li>• Composition of the atom</li> <li>• Concept of atomic number and isotopes</li> <li>• Periodic table</li> <li>• Types of chemical bonds</li> </ul> | Introduction to chemistry | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |
| <b>Second week</b> | 2     | <ul style="list-style-type: none"> <li>• Methods of analysis</li> <li>• Solutions and their types</li> <li>• Preparing standard solutions</li> <li>• Concentrations</li> </ul>                                            | Analytical chemistry      | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and</li> </ul>                                                                                     | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |



|                    |   |                                                                                                                                         |                        |                                                                                                                                                                        |                                                                |
|--------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
|                    |   |                                                                                                                                         |                        | discussion learning strategy.<br>• Information presentation learning strategy                                                                                          |                                                                |
| <b>Third week</b>  | 2 | Molar concentration<br>• Normal concentration<br>• Parts per million (ppm) concentration<br>• Solving examples,                         | • Analytical chemistry | • Cooperative learning strategy.<br>• Brainstorming learning strategy.<br>• Exchange and discussion learning strategy.<br>• Information presentation learning strategy | • Daily, oral and written exams<br>• Reports<br>• Discussions. |
| <b>Fourth week</b> | 2 | • Chemical equilibrium<br>• Buffer solution<br>• Titration<br>• Redox titrations<br>• Neutralization titrations<br>• Complex titrations | • Analytical chemistry | • Cooperative learning strategy.<br>• Brainstorming learning strategy.<br>• Exchange and discussion learning strategy.<br>• Information presentation learning strategy | • Daily, oral and written exams<br>• Reports<br>• Discussions. |
| <b>Fifth weeks</b> | 2 | • Acid-base theories<br>• Types of chemical reactions                                                                                   |                        | • Cooperative learning strategy.                                                                                                                                       | • Daily, oral and written exams                                |



|              |   |                                                                                                          |                                                                  |                                                                                                                                                                                                                                            |                                                                                                                              |
|--------------|---|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
|              |   | <ul style="list-style-type: none"> <li>• pH scale</li> </ul>                                             |                                                                  | <ul style="list-style-type: none"> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul>                                           | <ul style="list-style-type: none"> <li>• Reports</li> <li>• Discussions.</li> </ul>                                          |
| Sixth week   | 2 | Introduction to spectrophotometry <ul style="list-style-type: none"> <li>• Lambert-Beer's law</li> </ul> | •                                                                | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |
| seventh week | 2 | problems, and applications of Lambert-Beer's law                                                         | <ul style="list-style-type: none"> <li>• Spectroscopy</li> </ul> | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strateg</li> </ul>  | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |



|                |   |                                                                                                                                                                                                                                    |                   |                                                                                                                                                                                                                                            |                                                                                                                              |
|----------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Ninth week     | 2 | Hydrocarbons<br>• Alkanes                                                                                                                                                                                                          | Organic chemistry | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |
| Tenth week     | 2 | <ul style="list-style-type: none"> <li>• Alkenes</li> <li>• Alkynes</li> </ul>                                                                                                                                                     | Organic chemistry | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |
| Eleventh weeks | 2 | <ul style="list-style-type: none"> <li>• Chemical Structure</li> <li>• Classification of Alcohols</li> <li>• Chemical and Physical Properties</li> <li>• Methods of Preparing Alcohols</li> <li>• Reactions of Alcohols</li> </ul> | Alcohols          | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> </ul>                                                       | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |



|                        |    |                                                                                                                                                                                                                                      |                       |                                                                                                                                                                                                                                            |                                                                                                                              |
|------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
|                        |    |                                                                                                                                                                                                                                      |                       | <ul style="list-style-type: none"> <li>• Information presentation learning strateg</li> </ul>                                                                                                                                              |                                                                                                                              |
| <b>Twelfth week</b>    | 22 | Chemical Structure <ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Aldehydes and Ketones</li> <li>• Methods of Preparing Aldehydes and Ketones</li> <li>• Reactions of Aldehydes and Ketones</li> </ul> | Aldehydes and ketones | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |
| <b>thirteenth week</b> | 2  | <ul style="list-style-type: none"> <li>• Chemical Structure</li> <li>• Chemical and Physical Properties of Carboxylic Acids</li> <li>• Methods of Preparing Carboxylic Acids</li> <li>• Reactions of Carboxylic Acids</li> </ul>     | Carboxylic acids      | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning strategy.</li> <li>• Exchange and discussion learning strategy.</li> <li>• Information presentation learning strategy</li> </ul> | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>• Discussions.</li> </ul> |
| <b>Fourteenth Week</b> | 2  | <ul style="list-style-type: none"> <li>• Chemical Structure</li> <li>• Chemical and Physical Properties of Aromatic Compounds</li> <li>• Methods of</li> </ul>                                                                       | Aromatic compounds    | <ul style="list-style-type: none"> <li>• Cooperative learning strategy.</li> <li>• Brainstorming learning</li> </ul>                                                                                                                       | <ul style="list-style-type: none"> <li>• Daily, oral and written exams</li> <li>• Reports</li> <li>•</li> </ul>              |



|                       |   |                                                                                                                              |        |                                                                                                                                                                        |                                                                |
|-----------------------|---|------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
|                       |   | Preparing Aromatic Compounds<br><br>• Reactions of Aromatic Compounds                                                        |        | strategy.<br>• Exchange and discussion learning strategy.<br>• Information presentation learning strategy                                                              | Discussions.                                                   |
| <b>Fifteenth Week</b> | 2 | • Chemical Structure<br>• Chemical and Physical Properties of Amines<br>• Methods of Preparing Amines<br>Reactions of Amines | amines | • Cooperative learning strategy.<br>• Brainstorming learning strategy.<br>• Exchange and discussion learning strategy.<br>• Information presentation learning strategy | • Daily, oral and written exams<br>• Reports<br>• Discussions. |
|                       |   |                                                                                                                              |        |                                                                                                                                                                        |                                                                |
|                       |   |                                                                                                                              |        |                                                                                                                                                                        |                                                                |
|                       |   |                                                                                                                              |        |                                                                                                                                                                        |                                                                |
|                       |   |                                                                                                                              |        |                                                                                                                                                                        |                                                                |



### 11. Course Evaluation

The grade of the semester (100) is distributed as follows  
 The effort grade is 40, with 25 theoretical and 15 practical.  
 The final exam grade is 60, with 35 theoretical and 25 practical.

### 12 Learning and Teaching Resources

#### Required textbooks (methodology, if any)

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Key references (sources)                                           | <ul style="list-style-type: none"> <li>- CLINICAL BIOCHEMISTRY &amp; METABOLIC MEDICINE Catherine E. Housecroft and Alan G. Sharpe, Inorganic chemistry, 2<sup>nd</sup> edition.</li> <li>- Skoog &amp; West, fundamental of analytical chemistry, 9th edition</li> <li>- John Kenke, Analytical Chemistry for Technicians Fourth Edition,</li> <li>- Morrison &amp; Boyd, organic chemistry , 8th edition</li> <li>- Paula Bruice, organic chemistry , 4th edition</li> </ul> <p>Graham Solomon, organic chemistry , 10th edition</p> |
| Recommended books and references (scientific journals, reports...) | <p>Lehninger Principles of Biochemistry,</p> <p>Harper's Illustrated Biochemistry</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Electronic references, websites                                    | <ul style="list-style-type: none"> <li>- Anita Goel, Types and significance of chemical bonds, Daulat Ram College University of Delhi</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                       |
| Course Development Plan                                            | <ul style="list-style-type: none"> <li>• Updating scientific content:</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



- |  |                                                                                          |
|--|------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>• <b>Practical and applied training:</b></li></ul> |
|--|------------------------------------------------------------------------------------------|

## Course Description Form



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |                         |                              |         |                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------|------------------------------|---------|------------------------------------------|
| 1. Name The Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |                         |                              |         |                                          |
| Laboratory equipment I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                         |                              |         |                                          |
| 2. Code The Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |                         |                              |         |                                          |
| Atu_chmML114                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |                         |                              |         |                                          |
| 3. the chapter / year :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                         |                              |         |                                          |
| 2024-2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                         |                              |         |                                          |
| 4. Date numbers this Description: 2024/10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                         |                              |         |                                          |
| 5. Forms the audience Available: morning / Good evening                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                         |                              |         |                                          |
| 6. Number Study hours(Total) numberUnits(Total)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |                         |                              |         |                                          |
| 30 hour/// 4 Units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |                         |                              |         |                                          |
| 7. Name responsible The Course Academic ) if more from name It is mentioned(.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |                         |                              |         |                                          |
| Email: <a href="mailto:enas.kazem.chm@atu.edu.iq">enas.kazem.chm@atu.edu.iq</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |                         |                              |         |                                          |
| Inas Kazim Abdul Amir                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |                         |                              |         |                                          |
| 8. GoalsThe Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |                         |                              |         |                                          |
| <ul style="list-style-type: none"> <li>Goals Public:</li> <li>Aims The material to that He is The student in end The year Academic Able on Recognition on :</li> <li>1. Types microscopes Electronic and optical</li> <li>2. Scales And its types</li> <li>3. Devices AnalysisSpectral</li> <li>4. incubator And the ovens And the device Expulsion Central</li> <li>5.Electroforces</li> <li>Goals Private:</li> <li>1. recognize The studentOn the scientific theories on which these devices operate</li> <li>2. recognizeThe student is familiar with the scientific techniques that these devices use.</li> <li>3. recognize The student on parts And the method a jobEvery device</li> <li>4. recognize The studentOn how to maintain and sustain these devices.</li> </ul> |               |                         |                              |         | <b>Course objectives</b><br>A knowledge: |
| 9. Strategies education and learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                         |                              |         |                                          |
| <b>Lectures and lessonsThe process-outcome-based learning-Project-based learning-Team-based learning- learning The building on solution problems - learning The building on the society- learning Self.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                         |                              |         | Strategy                                 |
| 10. structure<br>The Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                         |                              |         |                                          |
| road<br>Evaluation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | road learning | name Unity or the topic | Outputs learning<br>Required | watches | week                                     |

|                                                        |                                                                                                   |                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                      |         |      |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| - Examstheory-<br>practical<br>- discussions           | Lectures and<br>lessons The<br>process<br>-Discussion<br>- Storm mental                           | General introduction and<br>Ordinary Microscope                                                                                                                                                                                                                     | that recognize The<br>student on General<br>Introduction and the<br>ordinary microscope.                                                                                                                                                                                                                             | 2T + 4P | 1    |
| - Examstheory-<br>practical<br>- discussions           | Lectures and<br>lessons The<br>process<br>-Discussion<br>brainstorming<br>solution some<br>Issues | Light Microscopes<br>Microscopes Depending<br>on lens system:<br>Simple microscope .1<br>Compound .2<br>microscope Parts &<br>principles of the<br>microscope<br>Illumination, Mag<br>nification and<br>resolution<br>Setting up &<br>Applications Care &<br>safety | recognizeStudent<br>on light<br>microscopes<br>Microscopes<br>according to<br>the lens<br>system:<br>.1simple<br>microscope.2<br>microscope The<br>complex<br>Parts of a microscope<br>and its working<br>principle (illumination)<br>And the magnification<br>Precision setting and<br>applications Care and Safety | 2T + 4P | 2-3  |
| - Theoretical<br>exams -<br>practical<br>- discussions | Lectures and<br>lessons The<br>process<br>-Discussion<br>brainstorming<br>solution some<br>Issues | Light Microscopes<br>Microscopes Depending<br>on optical technique: 1.<br>Bright field microscope 2.<br>Dark field microscope 3.<br>Phase Contrast<br>microscope 4.<br>Fluorescent microscope<br>Parts & principle Setting<br>up & Applications Care<br>& safety    | that recognize The<br>student on microscopes<br>Optical microscopes<br>According to Technology<br>Visual: .1 microscope field<br>Bright .2 microscope<br>field Dark .3<br>microscope contrast<br>The stage .4 microscope<br>Fluorescence Parts. The<br>principle preparation and<br>applicationsCare and<br>Safety   | 2T + 4P | 4-7  |
| - Theoretical<br>exams -<br>practical<br>- discussions | Lectures and<br>lessons The<br>process<br>- Discussion -<br>Storm mental                          | Electron Microscope<br>Parts & principles<br>Magnification &<br>resolution<br>Applications                                                                                                                                                                          | Recognition on electron<br>microscopeParts and<br>Principle<br>Magnification and<br>Accuracy<br>Applications                                                                                                                                                                                                         | 2T + 4P | 8    |
| - Theoretical<br>exams -<br>practical<br>- discussions | Lectures and<br>lessons The<br>process<br>- Discussion -<br>Storm mental                          | Spectrophotometer Parts<br>& principle setting up &<br>Calibration Uses and<br>care                                                                                                                                                                                 | that recognize The<br>student on<br>Spectrometer<br>partsPrinciple of<br>preparation,<br>calibration, uses<br>and care                                                                                                                                                                                               | 2T + 4P | 9-10 |

|                                                      |                                                                 |                                                                                                                        |                                                                                                                  |         |    |
|------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------|----|
| - Theoretical exams - practical<br>- discussions     | Lectures and lessons The process<br>- Brainstorming discussion  | Centrifugation<br>Parts & principle of the centrifuge<br>Types & Applications<br>Care and safety                       | To know the centrifuge<br>Parts and working principle of centrifuge<br>Types and applications<br>Care and Safety | 2T + 4P | 11 |
| - Theoretical exams - practical<br>discussions       | Lectures and lessons The process<br>- Brainstorming discussion  | Autoclave Principle & Applications<br>Care and safety                                                                  | that Learn about the working principle of the autoclave, its applications, care and safety.                      | 2T + 4P | 12 |
|                                                      | □ General review and questions and answers                      | Microbiological Safety Cabinet<br>Types of safety cabinet<br>Principle & Applications<br>Maintenance of safety cabinet | treasury<br>Microbiological Safety Cabinet<br>Types The principle<br>Safety cabinet maintenance applications     | 2T + 4P | 13 |
| - Theoretical exams - practical<br>- discussion<br>s | Lectures and lessons The process<br>- Discussion - Storm mental | Incubator Types of incubators<br>Principle & Applications<br>Care of incubator                                         | To know the types incubators principle<br>Incubators and their applications<br>Incubator care                    | 2T + 4P | 14 |
| - Theoretical exams - practical<br>- discussion<br>s | Lectures and lessons The process<br>- Brainstorming discussion  | Balance<br>Types – Parts – Applications – Advantages – Disadvantage                                                    | recognize The student<br>On the scale types- Parts - Applications- Advantages- Disadvantages                     | 2T + 4P | 15 |

#### 11 Rating The Course

degree striving 40 25) degree exam theoretical 15+ degrees exam practical( degree Exam Final 60 (35) Exam theoretical 25+ Exam practical)

#### 12. Learning and teaching resources

| Lectures- Presentations                                                                                                               | books The reporter Required methodology that I found( Main referencesSources |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Mozafari, M. (Ed.). (2020). Handbook of Biomaterials Bioceramics. Woodhead Publishing.                                                |                                                                              |
| Cimpean, A., & Miculescu, F. (Eds.). (2020). Biomaterials Biocompatibility.                                                           |                                                                              |
| Ninfa, A. J., Ballou, D., & Benore, M. (2015). Fundamentals of Biochemistry: Approaches for Biochemistry and Biotechnology (2nd ed.). |                                                                              |
| Stryer, L., Voet, D., Voet, J. G., & Pratt, C. W. (2023). Biochemistry (10th ed.). Palgrave Macmillan.                                |                                                                              |





## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>1. Course Name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |
| Theoretical Terminology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |
| <b>2. Course code : Atu_chmML112</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |
| <b>3. the chapter/year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| 2024/2025 (quarterly)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |
| <b>4. Date this description was prepared</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| 17\8\2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <b>5. Available attendance forms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |
| My presence 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <b>6. Number of study hours(kidney)/Number of units(everyoneY)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| 30hour(2Hours per week)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |
| <b>7. Course Instructor Name(If more than one name is mentioned)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |
| the name: Prof. Dr. Abdul Samad Aliwi Hassan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| Email: samadovaabditch@atu.edu.iq                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| <b>8. Course objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| <ul style="list-style-type: none"> <li><b>Cognitive objectives:</b> <ol style="list-style-type: none"> <li>1- ATo know aboutThe linguistic and scientific meaning of terms .</li> <li>2- Get to knowRules for using terms.</li> <li>3- Get to knowThe largest amount of medical term</li> </ol> </li> <li><b>Program skill objectives:</b> <ul style="list-style-type: none"> <li>✓ Understanding the terms.</li> <li>✓ Linking terms and their synonyms.</li> <li>✓ Knowing the methods of using more than one term in medical expression.</li> </ul> </li> </ul> | <b>Course objectives</b> |
| <b>9. Teaching and learning strategies</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| <ul style="list-style-type: none"> <li>• AFor theoretical lectures Private.</li> <li>• AView videos of foreign universitiesTo explain the curriculum.</li> <li>• Review references and related books.</li> </ul>                                                                                                                                                                                                                                                                                                                                                   | <b>Strategy</b>          |
| <b>Evaluation methods:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |

- AFor formative assessment.
- Asking questions.
- Exams.

10. **Course structure**  
**semester the first**

| Evaluation method                   | Learning method                                      | Name of unit or topic | Required learning outcomes | watches | week       |
|-------------------------------------|------------------------------------------------------|-----------------------|----------------------------|---------|------------|
| Overall Rating Oral and theoretical | Use of the whiteboard and educational display screen | Introduction          | Get to know the material   | 2       | the first  |
| Overall Rating Oral and theoretical | Use of the whiteboard and educational display screen | Prefixes              | precedents                 | 2       | the second |
| Overall Rating Oral and theoretical | Use of the whiteboard and educational display screen | Suffixes              | Suffixes                   | 2       | the third  |
| Overall Rating Oral and theoretical | Use of the whiteboard and educational display screen | Combining forms       | Recombinant formulas       | 2       | Fourth     |
| Overall Rating Oral and theoretical | Use of the whiteboard and educational display screen | Cells and tissues     | Cells, tissues and organs  | 2       | Fifth      |
| Overall Rating Oral and theoretical | Use of the whiteboard and educational display screen | Body structure        | Body composition           | 2       | Sixth      |



|                                    |                                                      |                         |                       |   |            |
|------------------------------------|------------------------------------------------------|-------------------------|-----------------------|---|------------|
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Synonyms                | Synonyms              | 2 | Seventh    |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Antonyms                | Antibiotics           | 2 | The eighth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Diseases and treatments | Disease and treatment | 2 | Ninth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Body systems            | Body systems          | 2 | tenth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Body systems            | Body systems          | 2 | eleventh   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Body systems            | Body systems          | 2 | twelfth    |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Abbreviations           | Abbreviations         | 2 | thirteenth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display        | symbols                 | Symbols               | 2 | fourteenth |



|                                    |                                                      |             |                 |   |           |
|------------------------------------|------------------------------------------------------|-------------|-----------------|---|-----------|
|                                    | screen                                               |             |                 |   |           |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | specialists | Specializations | 2 | fifteenth |

## Second semester/ Anatomy : Atu\_chmML122

| Evaluation method                  | Learning method                                      | Name of unit or topic | Required learning outcomes | watches | week       |
|------------------------------------|------------------------------------------------------|-----------------------|----------------------------|---------|------------|
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Introduction          | Introductory introduction  | 2       | the first  |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Anatomical levels     | Dissection methods         | 2       | the second |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Body regions          | Body areas                 | 2       | the third  |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Anatomical planes     | Anatomy levels             | 2       | Fourth     |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Directional terms     | Directional terms          | 2       | Fifth      |
| Overall RatingOral and             | Use of the whiteboard and educational display        | Head                  | head                       | 2       | Sixth      |



|                                    |                                                      |             |                                 |   |            |
|------------------------------------|------------------------------------------------------|-------------|---------------------------------|---|------------|
| theoretical                        | screen                                               |             |                                 |   |            |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Neck        | neck                            | 2 | Seventh    |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Chest       | chest                           | 2 | The eighth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Abdomen     | abdomen                         | 2 | Ninth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Cavities    | thoracic and abdominal cavities | 2 | tenth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Pelvis      | basin                           | 2 | eleventh   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Back        | noon                            | 2 | twelfth    |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Upper limbs | upper limbs                     | 2 | thirteenth |
| Overall RatingOral and             | Use of the whiteboard and educational                | Lower limbs | lower extremities               | 2 | fourteenth |

|                                                                                                                                   |                                                      |                                                                                |                        |   |           |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------|------------------------|---|-----------|
| theoretical                                                                                                                       | display screen                                       |                                                                                |                        |   |           |
| Overall Rating Oral and theoretical                                                                                               | Use of the whiteboard and educational display screen | Levels of organization                                                         | Levels of organization | 2 | fifteenth |
| <b>11. Course Evaluation</b>                                                                                                      |                                                      |                                                                                |                        |   |           |
| Semester grade(100) Distributed in the form following:<br>25+15+35+25                                                             |                                                      |                                                                                |                        |   |           |
| <b>12. Learning and teaching resources</b>                                                                                        |                                                      |                                                                                |                        |   |           |
| Ann and Carol (2000). Medical terminology                                                                                         |                                                      | Required textbooks(methodology that I found)                                   |                        |   |           |
| A.S.U. Hassan (2021). General anatomy                                                                                             |                                                      | Main references(Sources)                                                       |                        |   |           |
| Medical Terminology Translator                                                                                                    |                                                      | Recommended supporting books and references(Scientific journals, reports.... ) |                        |   |           |
| PubMed sites<br>Wikipedia                                                                                                         |                                                      | the reviewer electronic, websites                                              |                        |   |           |
| <ul style="list-style-type: none"> <li>Monthly update</li> <li>Integrating national research</li> <li>Related seminars</li> </ul> |                                                      | Curriculum Development Plan                                                    |                        |   |           |



## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>1. Course name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| Human biology1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| <b>2. Course code</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| Atu_chmML113                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
| <b>3. semester/year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| the first /2024-2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <b>4. Date this description was prepared</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
| 12/1/2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |
| <b>5. Available attendance forms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| Physical presence in the classroom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |
| <b>6. Number of study hours (total) / Number of units (total)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| 105 hours – 4 credit hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <b>7. Name of the course administrator (if more than one name is mentioned)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| Name: M. Ahmed Rahi Abdul Email:kuh.ahd12@atu.edu.iq                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <b>8. Course objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |
| <p>1) Medical biology is one of the important basic sciences for students of medical colleges and related and similar colleges. Biology studies many forms of life in different organisms, as well as their mutual relationship with the surrounding environment and their relationship with other sciences.</p> <p>2) Biology provides a clear understanding of living organisms by knowing their structure and functions.</p> <p>3) One of the most important principles of biology is that all living things are made up of cells. Biology studies the basis of cell development in animals and plants and all life phenomena such as growth, movement, involution, reproduction, adaptation, etc. Today's biology focuses on analyzing the structure and functions of genes, regulating the synthesis of enzymes and other proteins, studying the ultramicroscopic structure of the cell and its contents, studying the mechanism of cellular differentiation, and studying molecular biology.</p> | <b>Course objectives</b> |
| <b>9. Teaching and learning strategies</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |



Theoretical and practical laboratory methods, lectures, visual and video demonstrations, three-dimensional models, and open discussion method.

Strategy

**Course structure**

| Evaluation method                                             | Learning method                                     | Name of unit or topic                                                                                                                            | Required learning outcomes | Weeks                          | Week |
|---------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------|------|
| Theoretical tests in person - practical tests in laboratories | Lecture<br>Practical application in the laboratory  | Definition of Biology, The Science of Biology, Importance of study Biology, Cell Theory, Some subdivision of Biology.                            | Understanding the lecture  | 2- Theoretical<br>5- Practical | 1    |
| Theoretical tests in person - practical tests in laboratories | Lecture and practical application in the laboratory | The Kingdom of living things, Classification of Organisms, Categories of Classification of Organisms, The five Kingdom Scheme of Classification. | Understanding the lecture  | 2- Theoretical<br>5- Practical | 2    |
| Theoretical tests in person - practical tests in laboratories | Lecture and practical application in the laboratory | Cell Structure, Organelles and Functions, Physical Properties of Cells.                                                                          | Understanding the lecture  | 2- Theoretical<br>5- Practical | 3    |
| Theoretical tests in person - practical tests in laboratories | Lecture<br>Practical application in the laboratory  | Cell Membrane, Structure, Functions, Endocytosis, Exocytosis.                                                                                    | Understanding the lecture  | 2- Theoretical<br>5- Practical | 5    |
| Theoretical tests in person - practical tests in laboratories | Lecture and practical application in the laboratory | Chemical composition of cells, Biochemistry of cells.                                                                                            | Understanding the lecture  | 2- Theoretical<br>5- Practical | 6    |
| Theoretical tests in person - practical tests in laboratories | Lecture<br>Practical application in the laboratory  | Prokaryotes Cells, Eukaryotes Cells, Difference, Characteristics and Comparison.                                                                 | Understanding the lecture  | 2- Theoretical<br>5- Practical | 7    |



|                                                                  |                                                     |                                                                                                                                                                          |                           |                                |    |
|------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------|----|
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory  | The Characteristics of living things (Organisms), Evaluation, Adaptation, Respiration, Homeostasis, Metabolism, Anabolism, Catabolism, Respond to stimuli, Reproduction. | Understanding the lecture | 2- Theoretical<br>5- Practical | 8  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Cell Division (Mitosis).                                                                                                                                                 | Understanding the lecture | 2- Theoretical<br>5- Practical | 9  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory  | Cell Division (Meiosis).                                                                                                                                                 | Understanding the lecture | 2- Theoretical<br>5- Practical | 10 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory  | Inheritance, Genetic Concepts and Principles.                                                                                                                            | Understanding the lecture | 2- Theoretical<br>5- Practical | 11 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Gene Expression, Concepts, Mechanism of action.                                                                                                                          | Understanding the lecture | 2- Theoretical<br>5- Practical | 12 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory  | Organ Systems (Digestive, Circulatory, Respiratory, Urinary, Muscularly, Nervous) Systems.                                                                               | Understanding the lecture | 2- Theoretical<br>5- Practical | 13 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Human Body Defense (Immunity, Antigen, Antibody), Hormones, Enzymes.                                                                                                     | Understanding the lecture | 2- Theoretical<br>5- Practical | 14 |
| Theoretical                                                      | Lecture                                             | Scientific Methods.                                                                                                                                                      | Understanding             | 2- Theoretical                 | 15 |



|                                                                                                                                        |                                                            |                                                                                  |             |              |  |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------|-------------|--------------|--|
| tests in person<br>- practical tests<br>in laboratories                                                                                | <b>Practical<br/>application<br/>in the<br/>laboratory</b> | Steps and<br>Examples of<br>Scientific<br>Methods.                               | the lecture | 5- Practical |  |
| <b>11. Course Evaluation</b>                                                                                                           |                                                            |                                                                                  |             |              |  |
| the audience<br>Participation<br>Evaluation<br>Weekly reports                                                                          |                                                            |                                                                                  |             |              |  |
| <b>12. Learning and teaching resources</b>                                                                                             |                                                            |                                                                                  |             |              |  |
| Prof. Gonsalves, Biology 25: Human<br>Biology, Los<br>Angeles City College, Loosely Based<br>on Mader's Human Biology, 7th<br>edition. |                                                            | Main references (sources)                                                        |             |              |  |
| - Nature<br>- Science<br>- E. book and websites                                                                                        |                                                            | Recommended supporting books and<br>references (scientific journals, reports...) |             |              |  |
| Medical website                                                                                                                        |                                                            | Electronic references, websites                                                  |             |              |  |



## Course Description Form

|                                                                          |                                                      |
|--------------------------------------------------------------------------|------------------------------------------------------|
| 1. Course name                                                           | Human biology2                                       |
| 2. Course code                                                           | Atu_chmML123                                         |
| 3. semester/year                                                         | the second /2024-2025                                |
| 4. Date this description was prepared                                    | 1/6/2025                                             |
| 5. Available attendance forms                                            | Physical presence in the classroom                   |
| 6. Number of study hours (total) / Number of units (total)               | 105 hours – 4 credit hours                           |
| 7. Name of the course administrator (if more than one name is mentioned) | Name: M. Ahmed Rahi Abdul Email:kuh.ahd12@atu.edu.iq |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 8. Course objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Course objectives |
| <p>1) Medical biology is one of the important basic sciences for students of medical colleges and related and similar colleges. Biology studies many forms of life in different organisms, as well as their mutual relationship with the surrounding environment and their relationship with other sciences.</p> <p>2) The second section of medical biology deals with various types of creatures by analyzing the partial foundations of evolution by comparing the chemical environment of specific proteins such as (hemoglobin, enzymes, and hormones). It also focuses on the study of lower living organisms such as bacteria, viruses, parasites, fungi, etc., focusing on the existence of these organisms and their medical importance.</p> |                   |

|                                                                                                                                               |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 9. Teaching and learning strategies                                                                                                           |          |
| Theoretical and practical laboratory methods, lectures, visual and video demonstration, three-dimensional models, and open discussion method. | Strategy |

| Course structure                                              |                                                 |                                                                                                                                 |                            |                             |      |
|---------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|------|
| Evaluation method                                             | Learning method                                 | Name of unit or topic                                                                                                           | Required learning outcomes | watches                     | week |
| Theoretical tests in person - practical tests in laboratories | Lecture Practical application in the laboratory | Viruses, Virioids, Prions, Bacteriophages, Viral life cycle, Characteristics, Shapes, Viral Human Diseases, Harmful of Viruses. | Understanding the lecture  | 2- Theoretical 5- Practical | 1    |
| Theoretical tests in person - practical tests                 | Lecture and practical application               | Kingdom of Monera: Phylum Schizophyta (Bacteria), Classification, Structure, Morphology, Growth,                                | Understanding the lecture  | 2- Theoretical 5- Practical | 2    |



| in laboratories                                                  | in the laboratory                                   | Function, Motility.                                                                              |                           |                                |    |
|------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------|--------------------------------|----|
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Harmful Activity of Bacteria, Bacterial Diseases in Human and Animals, Control of bacteria       | Understanding the lecture | 2- Theoretical<br>5- Practical | 3  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture Practical application in the laboratory     | Kingdom of Protista, Simple Algae, Harmful of Algae.                                             | Understanding the lecture | 2- Theoretical<br>5- Practical | 4  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Kingdom of Protista, Protozoans, Classification of Protozoa.                                     | Understanding the lecture | 2- Theoretical<br>5- Practical | 5  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture Practical application in the laboratory     | Phylum of Sarcodina, Amoebae's, Phylum of Zoomastigina, Trypanosome, Giardia.                    | Understanding the lecture | 2- Theoretical<br>5- Practical | 6  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture Practical application in the laboratory     | Phylum of Sporozoa, Plasmodium.                                                                  | Understanding the lecture | 2- Theoretical<br>5- Practical | 7  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Kingdom of Fungi, Classification, Reproduction.                                                  | Understanding the lecture | 2- Theoretical<br>5- Practical | 8  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture Practical application in the laboratory     | Harmful Activities of Fungi.                                                                     | Understanding the lecture | 2- Theoretical<br>5- Practical | 9  |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture Practical application in the laboratory     | Yeast and Yeast like Fungi, Characteristic and Classification, Candida.                          | Understanding the lecture | 2- Theoretical<br>5- Practical | 10 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture and practical application in the laboratory | Kingdom of Animals, Classification, Invertebrates and Vertebrates, Importance to Human Diseases. | Understanding the lecture | 2- Theoretical<br>5- Practical | 11 |
| Theoretical tests in person<br>- practical tests                 | Lecture Practical application                       | Human Bodies, Protection, Support and Locomotion.                                                | Understanding the lecture | 2- Theoretical<br>5- Practical | 12 |



|                                                                  |                                                    |                                                                         |                           |                                |    |
|------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------|---------------------------|--------------------------------|----|
| in laboratories                                                  | in the laboratory                                  |                                                                         |                           |                                |    |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory | Helminths, Characteristics and Classification.                          | Understanding the lecture | 2- Theoretical<br>5- Practical | 13 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory | Flat Worms, Round Worms, Classification, Harm full Activities to Human. | Understanding the lecture | 2- Theoretical<br>5- Practical | 14 |
| Theoretical tests in person<br>- practical tests in laboratories | Lecture<br>Practical application in the laboratory | Management of industrial, agricultural and medical waste.               | Understanding the lecture | 2- Theoretical<br>5- Practical | 15 |

**11. Course Evaluation**

the audience  
Participation  
Evaluation  
Weekly reports

**12. Learning and teaching resources**

|                                                                                                                            |                                                                               |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Prof. Gonsalves, Biology 25: Human Biology, Los Angeles City College, Loosely Based on Mader's Human Biology, 7th edition. | Main references (sources)                                                     |
| - Nature<br>- Science<br>- E. book and websites                                                                            | Recommended supporting books and references (scientific journals, reports...) |
| Medical website                                                                                                            | Electronic references, websites                                               |



## Course Description Form

|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name: English Language                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2. Course Code:<br>Atu_chmML118                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3. Semester / Year: 2024/2025                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4. Description Preparation Date: 2025/2/28                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 5. Available Attendance Forms:                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 6. Number of Credit Hours (Total) / Number of Units (Total)3/3                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 7. Course administrator's name (mention all, if more than one name)<br>Name: Assist lecturer : Fahd Dakhel Fahd<br>Email: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8. Course Objectives                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Course Objectives                                                                                                         | <ul style="list-style-type: none"><li>• .....</li><li>• .....</li><li>• .....</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                       |
| 9. Teaching and Learning Strategies                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Strategy                                                                                                                  | <ul style="list-style-type: none"><li>-Cooperative education strategy.</li><li>-Teaching strategy brainstorming.</li><li>-Education strategy collaborative concept planning.</li><li>-Education strategy real-time feedback</li><li>-Education strategy notes series.</li><li>-Education strategy by exchanging opinions and discussion.</li><li>-Education strategy by presenting information.</li><li>-Education strategy through training and presenting scientific developments</li></ul> |



| 10. Course Structure |       |                                                                                                                                                                                                                       |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                           |                                                           |
|----------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Week                 | Hours | Required Learning Outcomes                                                                                                                                                                                            | Unit of subject name                                 | Learning method                                                                                                                                                                                                                                                                                                                                                                                           | Evaluation method                                         |
| 1-2                  | 3     | 1- Raising students' level through reading and listening language exercises<br><br>2- Knowledge of English grammar rules<br><br>3- Know the basics of grammar<br><br>4- Knowledge spelling rules sentence arrangement | Introduction to the basics tenses of English grammar | Cooperative education strategy.<br>-Teaching strategy brainstorming.<br>-Education strategy collaborative concept planning.<br>-Education strategy real-time feedback<br>-Education strategy notes series.<br>-Education strategy by exchanging opinions and discussion.<br>-Education strategy by presenting information.<br>-Education strategy through training and presenting scientific developments | Daily, oral & written examinations, reports, discussions. |
| 3                    | 3     |                                                                                                                                                                                                                       | English sentence formation rule                      | =                                                                                                                                                                                                                                                                                                                                                                                                         | =                                                         |
| 4                    | 3     |                                                                                                                                                                                                                       | Proper nouns common nouns                            | =                                                                                                                                                                                                                                                                                                                                                                                                         | =                                                         |
| 5                    | 3     |                                                                                                                                                                                                                       | Write about yourself, and your projects              | =                                                                                                                                                                                                                                                                                                                                                                                                         | =                                                         |
| 6                    | 3     |                                                                                                                                                                                                                       | Present simple tense, question negative Affirmative, | =                                                                                                                                                                                                                                                                                                                                                                                                         | =                                                         |
| 7                    | 3     |                                                                                                                                                                                                                       | Present simple continuous                            | =                                                                                                                                                                                                                                                                                                                                                                                                         | =                                                         |



|       |   |                                                                |   |   |
|-------|---|----------------------------------------------------------------|---|---|
| 8     | 3 | Adverbs<br>Present perfect with<br>examples                    | = | = |
| 9     | 3 | And the<br>Question and imperative<br>sentences                | = | = |
| 10    | 3 | Past simple tense<br>and adverbs of<br>frequency               | = | = |
| 11    | 3 | Past continuous Affirmati<br>Negative ,question                | = | = |
| 12    | 3 | Past perfect with regular<br>verbs and irregular verbs         | = | = |
| 13    | 3 | Past perfect continuous te<br>Rules of " ed "                  | = | = |
| 14-15 | 3 | Future simple tense<br>Rules of " s, es "<br>Define types of s | = | = |

#### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

#### 12. Learning and Teaching Resources

|                                                                       |                        |
|-----------------------------------------------------------------------|------------------------|
| Required textbooks (curricular books, if any)                         | Basic English Language |
| Main references (sources)                                             | Headway                |
| Recommended books and references<br>(scientific journals, reports...) |                        |
| Electronic References, Websites                                       |                        |



## Course Description Form

|                                                                                |               |                         |                                                                                                                                                                                                                                                                          |         |      |
|--------------------------------------------------------------------------------|---------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 1. Name The Course                                                             |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| Laboratory Equipment 2                                                         |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 2. Course code                                                                 |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| Atu_chmML124                                                                   |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 3. Chapter / year                                                              |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| Second course                                                                  |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 4. History numbers this Description                                            |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 18-5-2025                                                                      |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 5. Forms the audience Available                                                |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| My presence                                                                    |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 6. number watches Academic (Total) number Units (Total)                        |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 4/6                                                                            |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| 7. name responsible The decision Academic ) if more from name It is mentioned( |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| Email: enas.kazem.chm@atu.edu.iq                                               |               |                         | Inas Kazim Abdul Amir                                                                                                                                                                                                                                                    |         |      |
| 8. Course objectives                                                           |               |                         |                                                                                                                                                                                                                                                                          |         |      |
|                                                                                |               |                         | <p>At the end of the academic year,</p> <p>The student will be able to understand the functions of the various cells and systems of the body in general and perform various techniques for analyzing blood and other body fluids.</p>                                    |         |      |
| 9. Teaching and learning strategies                                            |               |                         |                                                                                                                                                                                                                                                                          |         |      |
|                                                                                |               |                         | <ul style="list-style-type: none"> <li>- Discussion The organization The reactant</li> <li>- The statement Scientific - learning Cooperative</li> <li>- Problem solving - simulation</li> <li>- brainstorming - role-playing</li> <li>- Workshops Cooperative</li> </ul> |         |      |
| 10. Course structure                                                           |               |                         |                                                                                                                                                                                                                                                                          |         |      |
| road Evaluation                                                                | road learning | name Unity or the topic | Required learning outcomes                                                                                                                                                                                                                                               | watches | week |

|                                  |                                                                                                           |                                                                                                                                                                                                                                               |                                            |   |         |
|----------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|---------|
| Tests Theory and practical tests |  theoretical + practical | Microbiological safety cabinet<br>Types of safety cabinet<br>Principle & Uses<br>Maintenance of safety cabinet<br>Incubator<br>Types of incubators<br>Principle & Uses, Care of incubator<br>Pipettes, Bunsen Burner<br>Water bath & Dry oven | Study, knowledge and application practical | 6 | 4 - 1   |
|                                  |                                                                                                           | Principle & uses<br>Tutorial sheet                                                                                                                                                                                                            |                                            |   |         |
| Tests Theory and practical tests | theoretical + practical                                                                                   | Autoclave Principle & Uses<br>Care and safety<br>Tutorial sheet                                                                                                                                                                               | Study, knowledge and application practical | 6 | 5       |
| Tests Theory and practical tests | theoretical + practical                                                                                   | General introduction<br>PCR machine<br>Hybridization equipment<br>DNA sequencing machine<br>UV transilluminator<br>Care & Safety<br>Tutorial Sheet                                                                                            | Study, knowledge and application practical | 6 | 9 - 6   |
| Tests Theory and practical tests | theoretical + practical                                                                                   | Continuous flow analyzers<br>Centrifugal analyzers Principle & uses<br>Discrete auto analyzers<br>Dry chemical analyzers<br>Tutorial sheet                                                                                                    | Study, knowledge and application practical | 6 | 15 - 10 |

### 11. Course evaluation

distribution degree from 100 on according to Tasks The person in charge With it The student like Preparation Daily and exams Daily and oral Monthly and editorial and reports...etc  
5 presence And absence, 10 practical exam, 25 exam My theoretical month, 60 exam ultimate (25 practical + 35 theoretical)

### 12. Learning and teaching resources

|                                                                                                                                                                                                               |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                                                                                               | <b>Main references (sources)</b>                                                      |
| <ul style="list-style-type: none"> <li>Braybrook, J. H. (1996). Biocompatibility: Assessment of medical devices and materials. Biocompatibility: Assessment of Medical Devices and Materials, 246.</li> </ul> |                                                                                       |
| <b>E. book and websites</b>                                                                                                                                                                                   | <b>Recommended supporting books and references (scientific journals, reports....)</b> |
| <b>website</b>                                                                                                                                                                                                | <b>Electronic references, Internet sites</b>                                          |



## Course description form

| <b>1. Course Name</b>                                                                                                                             |                 |                                                                                                                                                                                                                      |                                 |                   |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------|----------------|
| Human rights and democracy                                                                                                                        |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>2. Course Code</b>                                                                                                                             |                 |                                                                                                                                                                                                                      |                                 |                   |                |
|                                                                                                                                                   |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>3. Semester/year</b>                                                                                                                           |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| the first /2024-2025                                                                                                                              |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>4. Date this description was prepared</b>                                                                                                      |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| 2/29/2024                                                                                                                                         |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>5. Available attendance forms</b>                                                                                                              |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| My presence                                                                                                                                       |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>6. Number of study hours (total)/number of units (total)</b>                                                                                   |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| 30 hours – 2 credits                                                                                                                              |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>7. Name of the course administrator (if more than one name is mentioned)</b>                                                                   |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| Name: Dr. Waseem Jabbar Ibrahim                                                                                                                   |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| Email:                                                                                                                                            |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>8. Course objectives</b>                                                                                                                       |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| Identifying the historical stages through which human rights have passed through religious and legal legislation                                  |                 |                                                                                                                                                                                                                      | Objectives of the study subject |                   |                |
| Understanding the concept of personal and public freedoms in accordance with religious laws, constitutions and laws.                              |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| Understanding equality based on gender, belief and race. Understanding the concepts of democracy                                                  |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| <b>9. Teaching and learning strategies</b>                                                                                                        |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| Theoretical and practical laboratory methods, lectures, photographic and video illustration, three-dimensional models, and open discussion method |                 |                                                                                                                                                                                                                      |                                 |                   | The strategies |
| <b>10. Course structure</b>                                                                                                                       |                 |                                                                                                                                                                                                                      |                                 |                   |                |
| Evaluation method                                                                                                                                 | Learning method | Name of the unit or topic                                                                                                                                                                                            | Required learning outcomes      | hours             | the week       |
| Actual presence<br>theory tests                                                                                                                   | Lecture given   | Human rights, their definition, and the introduction to human rights in ancient civilizations, especially the civilization of the Arfida Valley, human rights in divine laws, with a focus on human rights in Islam. | Understand the lecture          | 2-<br>Theoretical | 1              |
| Actual                                                                                                                                            | Lecture         | Human rights in                                                                                                                                                                                                      | Understand                      | 2-                | 2              |



|                                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |                   |   |
|------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------|---|
| presence<br>theory tests           | given            | contemporary and<br>modern history:<br>international<br>recognition of human<br>rights since World War<br>I. United Nations.<br>Regional recognition of<br>human rights: the<br>European Convention<br>on Human Rights, 1950<br><i>American Convention<br/>on Human Rights, 1969<br/>African Charter on<br/>Human Rights, 1981<br/>Arab Charter on Human<br/>Rights. 1994 Non-<br/>governmental<br/>organizations and<br/>human rights<br/>(International<br/>Committee of the Red<br/>Cross, Amnesty<br/>International, Human<br/>Rights Watch, National<br/>Human Rights<br/>Organizations</i> | the lecture               | Theoretical       |   |
| Actual<br>presence<br>theory tests | Lecture<br>given | Human rights in ethnic<br>constitutions between<br>theory and reality The<br>relationship between<br>human rights and<br>public freedoms: -1 <i>In<br/>the Universal<br/>Declaration of Human<br/>Rights - 2 in regional<br/>charters and national<br/>constitutions</i>                                                                                                                                                                                                                                                                                                                         | Understand<br>the lecture | 2-<br>Theoretical | 3 |
| Actual<br>presence<br>theory tests | Lecture<br>given | Economic, social and<br>cultural human rights,<br>civil human rights and<br>modern human rights:<br>facts in development,<br>the right to a clean<br>environment, the right<br>to solidarity, the right<br>to religion.                                                                                                                                                                                                                                                                                                                                                                          | Understand<br>the lecture | 2-<br>Theoretical | 4 |
| Actual<br>presence<br>theory tests | Lecture<br>given | Guarantees to respect<br>and protect human<br>rights at the national<br>level, guarantees in the<br>constitution and laws,                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Understand<br>the lecture | 2-<br>Theoretical | 5 |



|                              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |               |   |
|------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------|---|
|                              |               | <p>guarantees in the principle of the rule of law. Guarantees in constitutional oversight, guarantees in freedom of the press and public opinion, the role of non-governmental organizations in respecting and protecting human rights. Guarantees, respect and protection of human rights at the international level: - The role of the United Nations and its specialized agencies in providing guarantees - The role of regional organizations (the Arab League, The European Union, the African Union, the Organization of American States, and the ASEAN Organization.) The role of international, regional, non-governmental organizations and public opinion in respecting, respecting and protecting human rights</p> |                        |               |   |
| Actual presence theory tests | Lecture given | <p>The general theory of freedoms: the origin of rights and freedoms, the project's position on declared rights and freedoms, the use of the term public freedoms. The legal basis for the state of law.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Understand the lecture | 2-Theoretical | 6 |
| Actual presence theory tests | Lecture given | <p>Regulation of public freedoms by public authorities. Equality: the historical development of the</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Understand the lecture | 2-Theoretical | 7 |



|                              |               |                                                                                                                                                                      |                        |                |    |
|------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------|----|
|                              |               | concept of equality. The modern development of the idea of equality - equality between the sexes, - Equality between individuals according to their beliefs and race |                        |                |    |
| Actual presence theory tests | Lecture given | Democracy - its definition - its types, concepts of democracy                                                                                                        | Understand the lecture | 2- Theoretical | 8  |
| Actual presence theory tests | Lecture given | Democracy in the Third World, democratic systems in the world                                                                                                        | Understand the lecture | 2- Theoretical | 9  |
| Actual presence theory tests | Lecture given | The concept of freedoms, classification of public freedoms, basic freedom, intellectual freedoms, economic and social freedoms                                       | Understand the lecture | 2- Theoretical | 10 |
| Actual presence theory tests | Lecture given | Freedom of security and feeling of reassurance, freedom of coming and going, freedom of education, freedom of the press, freedom of assembly                         | Understand the lecture | 2- Theoretical | 11 |
| Actual presence theory tests | Lecture given | Freedom of association, freedom of work, right to own property                                                                                                       | Understand the lecture | 2- Theoretical | 12 |
| Actual presence theory tests | Lecture given | Freedom of trade and industry, freedom of women                                                                                                                      | Understand the lecture | 2- Theoretical | 13 |
| Actual presence theory tests | Lecture given | Political parties and public freedoms, scientific and technical progress and public freedoms                                                                         | Understand the lecture | 2- Theoretical | 14 |
| Actual presence theory tests | Lecture given | The future of public freedoms                                                                                                                                        | Understand the lecture | 2- Theoretical | 15 |

#### 11. Course evaluation

the audience , Share , Peer evaluation , Weekly reports

#### 12. Learning and teaching resources

Riyad Aziz Hadi, Human Rights, Its Development and Implications, Al-Atak Company, Cairo, 2013

Human Rights Watch

Main references (sources)

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

## Course description form



| <b>1. Course Name</b>                                                                                                                                                                                                   |                                                           |                           |                                 |                                |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------|---------------------------------|--------------------------------|--------------|
| Computer principles                                                                                                                                                                                                     |                                                           |                           |                                 |                                |              |
| <b>2. Course Code</b>                                                                                                                                                                                                   |                                                           |                           |                                 |                                |              |
| Atu_chmML116                                                                                                                                                                                                            |                                                           |                           |                                 |                                |              |
| <b>3. Semester/year</b>                                                                                                                                                                                                 |                                                           |                           |                                 |                                |              |
| the second /2024-2025                                                                                                                                                                                                   |                                                           |                           |                                 |                                |              |
| <b>4. Date this description was prepared</b>                                                                                                                                                                            |                                                           |                           |                                 |                                |              |
| 4/11/2024                                                                                                                                                                                                               |                                                           |                           |                                 |                                |              |
| <b>5. Available attendance forms</b>                                                                                                                                                                                    |                                                           |                           |                                 |                                |              |
| My presence                                                                                                                                                                                                             |                                                           |                           |                                 |                                |              |
| <b>6. Number of study hours (total)/number of units (total)</b>                                                                                                                                                         |                                                           |                           |                                 |                                |              |
| 60 hours – 3 credits                                                                                                                                                                                                    |                                                           |                           |                                 |                                |              |
| <b>7. Name of the course administrator (if more than one name is mentioned)</b>                                                                                                                                         |                                                           |                           |                                 |                                |              |
| Name: dr. Ahmed Taklif Tali                                                                                                                                                                                             |                                                           |                           | Email:                          |                                |              |
| <b>8. Course objectives</b>                                                                                                                                                                                             |                                                           |                           |                                 |                                |              |
| At the end of the academic year, the student will be able to understand the functions of the various cells and systems of the body in general and perform various techniques for analyzing blood and other body fluids. |                                                           |                           | Objectives of the study subject |                                |              |
| <b>9. Teaching and learning strategies</b>                                                                                                                                                                              |                                                           |                           |                                 |                                |              |
| Theoretical and practical laboratory methods, hospitals, lectures, photo and video illustrations, three-dimensional models, and open discussion method.                                                                 |                                                           |                           |                                 |                                | The strategy |
| <b>10. Course structure</b>                                                                                                                                                                                             |                                                           |                           |                                 |                                |              |
| Evaluation method                                                                                                                                                                                                       | Learning method                                           | Name of the unit or topic | Required learning outcomes      | hours                          | the week     |
| Actual theoretical tests - practical tests in laboratories                                                                                                                                                              | Lecture given<br>Practical application in the laboratory  | Operating System          | Understand the lecture          | 2- Theoretical<br>2- Practical | 1.           |
| Actual theoretical tests - practical tests in laboratories                                                                                                                                                              | Lecture given and practical application in the laboratory | Hardware and software     | Understand the lecture          | 2- Theoretical<br>2- Practical | 2.           |
| Actual theoretical tests - practical tests in laboratories                                                                                                                                                              | Lecture given<br>Practical application in the             | Files and folders         | Understand the lecture          | 2- Theoretical<br>2- Practical | 3.           |



|                                                            |                                                          |                                   |                        |                                |     |
|------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|------------------------|--------------------------------|-----|
|                                                            | laboratory                                               |                                   |                        |                                |     |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Folders and files managing</b> | Understand the lecture | 2- Theoretical<br>2- Practical | 4.  |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Computer Hardware</b>          | Understand the lecture | 2- Theoretical<br>2- Practical | 5.  |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Tab settings</b>               | Understand the lecture | 2- Theoretical<br>2- Practical | 6.  |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Page setup</b>                 | Understand the lecture | 2- Theoretical<br>2- Practical | 7.  |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Microsoft Excel</b>            | Understand the lecture | 2- Theoretical<br>2- Practical | 8.  |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Manipulating the contents</b>  | Understand the lecture | 2- Theoretical<br>2- Practical | 9.  |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Simple and complex formula</b> | Understand the lecture | 2- Theoretical<br>2- Practical | 10. |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | <b>Working with charts</b>        | Understand the lecture | 2- Theoretical<br>2- Practical | 11. |
| Actual theoretical                                         | Lecture given                                            | <b>Understanding power point</b>  | Understand the lecture | 2- Theoretical                 | 12. |



|                                                            |                                                          |                       |                        |                                          |     |
|------------------------------------------------------------|----------------------------------------------------------|-----------------------|------------------------|------------------------------------------|-----|
| tests - practical tests in laboratories                    | Practical application in the laboratory                  |                       |                        | cal<br>2-<br>Practical                   |     |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | Managing slide object | Understand the lecture | 2-<br>Theoreti<br>cal<br>2-<br>Practical | 13. |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | Internet Introduction | Understand the lecture | 2-<br>Theoreti<br>cal<br>2-<br>Practical | 14. |
| Actual theoretical tests - practical tests in laboratories | Lecture given<br>Practical application in the laboratory | Working with Email    | Understand the lecture | 2-<br>Theoreti<br>cal<br>2-<br>Practical | 15. |

#### 11. Course evaluation

the audience  
Share  
Peer evaluation  
Weekly reports

#### 12. Learning and teaching resources

|                                                                                                                                                                                                                                                                                      |                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Jr., DHLF, 2012. Introduction to Microsoft Office 2010. 2nd ed. sl:World scientific publishing.<br>Mayne, R., 2015. Introduction to Windows. 2nd ed. sl:World scientific publishing<br>Thomas Anderson, MD, 2014. Operating Systems: Principles and Practice. sl:University of Texas | Main references (sources)                                                      |
| E. book and websites                                                                                                                                                                                                                                                                 | Recommended supporting books and references (scientific journals, reports....) |
| website                                                                                                                                                                                                                                                                              | Electronic references, Internet sites                                          |

# **Second Stage**



## Course Description Form



1. Course Name:

Medical Bacteriology1

2. Course code

Atu\_chmML211

3. Semester / Year:

The second stage - the first course

4. Description Preparation Date:

2024-11-15

5. Available Attendance Forms:

My presence

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

4/6

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

The name: Dr. Zahraa Bassem Shaker

8. Course objectives

The student should be familiar with the basic concepts of the scientific subject, its theoretical foundations and practical methods, to increase the effectiveness and efficiency of laboratory data analysis in accordance with the objectives of the Medical Laboratory Technology Department.

9. Teaching and learning strategies

- Discussion The organization The reactant
- The statement Scientific
- learning Cooperative
- Problem solving
- simulation
- brainstorming
- role-playing
- Workshops Cooperative

10. Course structure

| Evaluation method | Learning method | Unit or subject name | Required learning outcomes | Hours | week |
|-------------------|-----------------|----------------------|----------------------------|-------|------|
|                   |                 |                      |                            |       |      |



|                                  |                         |                                                                                                                 |                                            |   |        |
|----------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|--------|
| Tests Theory and practical tests | theoretical + practical | Introduction Classification of bacteria                                                                         | Study, knowledge and application practical | 6 | 1      |
| Tests Theory and practical tests | theoretical + practical | Structure and function of bacteria<br>- Growth and death of bacteria<br>- Culturing of bacteria and media types | Study, knowledge and application practical | 6 | 5 - 2  |
| Tests Theory and practical tests | theoretical + practical | - Bacterial Physiology (Bacterial metabolism).                                                                  | Study, knowledge and application practical | 6 | 7 - 6  |
|                                  |                         | - Nutrient cycles and regulation                                                                                |                                            |   |        |
| Tests Theory and practical tests | theoretical + practical | Bacterial genetics.<br>- Genetic material.<br>- Plasmids, replication, mutation and genetic recombination.      | Study, knowledge and application practical | 6 | 8      |
| Tests Theory and practical tests | theoretical + practical | Microbial virulence factors and pathogenesis of bacterial infection.<br>- Microflora.                           | Study, knowledge and application practical | 6 | 10 - 9 |
| Tests Theory and practical tests | theoretical + practical | Chemotherapy and antibiotic resistance.<br>- Vaccination.                                                       | Study, knowledge and application practical | 6 | 11     |
| Tests Theory and practical tests | theoretical + practical | Gram positive cocci:<br>Staphylococcus, Streptococcus and enterococcus                                          | Study, knowledge and application practical | 6 | 14-15  |

## 11. Course Evaluation

distribution degree from 100 on according to Tasks The person in charge With it The student like Preparation Daily and exams Daily and oral Monthly and editorial and reports...etc  
5 presence And absence. 10 Practical exam monthly , 25 theoretical exam monthly , 60 exam ultimate

## 12. Learning and Teaching Resources

|                                                                                                                                                                                                                                                                                                                                                                                        |                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                        | Required Textbooks (Syllabus, if available) |
| <ul style="list-style-type: none"> <li>Logan, N. A., Hoffmaster, A. R., Shadomy, S. V., &amp; Stauffer, K. E. (2011). Bacillus and other aerobic endospore-forming bacteria. Manual of clinical microbiology, 381-402.</li> <li>Logan, N. A., &amp; Rodríguez-Díaz, M. (2006). Bacillus spp. and related genera. Principles and practice of clinical bacteriology, 139-158.</li> </ul> | Main References                             |



|  |                                                |
|--|------------------------------------------------|
|  | Recommended Supporting Books<br>and References |
|  | Internet Websites                              |



## Course Description Form

|                                                                     |                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                     |                                                                                                                                                                                                                                                                                                  |
| Medical Bacteriology2                                               |                                                                                                                                                                                                                                                                                                  |
| 2. Course code                                                      |                                                                                                                                                                                                                                                                                                  |
| Atu_chmML.221                                                       |                                                                                                                                                                                                                                                                                                  |
| 3. Semester / Year:                                                 |                                                                                                                                                                                                                                                                                                  |
| The second stage - the first course                                 |                                                                                                                                                                                                                                                                                                  |
| 4. Description Preparation Date:                                    |                                                                                                                                                                                                                                                                                                  |
| 2025-2-10                                                           |                                                                                                                                                                                                                                                                                                  |
| 5. Available Attendance Forms:                                      |                                                                                                                                                                                                                                                                                                  |
| My presence                                                         |                                                                                                                                                                                                                                                                                                  |
| 6. Number of Credit Hours (Total) / Number of Units (Total)         |                                                                                                                                                                                                                                                                                                  |
| 4/6                                                                 |                                                                                                                                                                                                                                                                                                  |
| 7. Course administrator's name (mention all, if more than one name) |                                                                                                                                                                                                                                                                                                  |
| The name: Dr. Zahraa Bassem Shaker                                  |                                                                                                                                                                                                                                                                                                  |
| 8. Course objectives                                                |                                                                                                                                                                                                                                                                                                  |
|                                                                     | The student should be familiar with the basic concepts of the scientific subject, its theoretical foundations and practical methods, to increase the effectiveness and efficiency of laboratory data analysis in accordance with the objectives of the Medical Laboratory Technology Department. |
| 9. Teaching and learning strategies                                 |                                                                                                                                                                                                                                                                                                  |
|                                                                     | <ul style="list-style-type: none"><li>- Discussion The organization The reactant</li><li>- The statement Scientific</li><li>- learning Cooperative</li><li>- Problem solving</li><li>- simulation</li><li>- brainstorming</li><li>- role-playing</li><li>- Workshops Cooperative</li></ul>       |

# 10. Course structure

| Evaluation method                | Learning method         | Unit or subject name                                                                                    | Required learning outcomes                 | Hours | week  |
|----------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|-------|
| Tests Theory and practical tests | theoretical + practical | Gram positive spore forming bacilli (Clostridium and Bacillus)                                          | Study, knowledge and application practical | 6     | 1     |
| Tests Theory and practical tests | theoretical + practical | Gram-positive non-spore-forming bacilli (Listeria and Corynebacterium) - Gram negative cocci: Neisseria | Study, knowledge and application practical | 6     | 4 - 2 |
| Tests Theory and practical tests | theoretical + practical | Enteric Gram-negative rods: E. coli, Klebsiella, Proteus, Pseudomonas, Acinetobacter, Shigella and      | Study, knowledge and application practical | 6     | 6 - 5 |
|                                  |                         | salmonella                                                                                              |                                            |       |       |
| Tests Theory and practical tests | theoretical + practical | Yersinia                                                                                                | Study, knowledge and application practical | 6     | 7     |
| Tests Theory and practical tests | theoretical + practical | Vibrio                                                                                                  | Study, knowledge and application practical | 6     | 8     |
| Tests Theory and practical tests | theoretical + practical | Campylobacter and Helicobacter                                                                          | Study, knowledge and application practical | 6     | 9     |
| Tests Theory and practical tests | theoretical + practical | Haemophilus, Bordetella and Brucella                                                                    | Study, knowledge and application practical | 6     | 10    |
| Tests Theory and practical tests | theoretical + practical | Chlamydia and Spirochaetes                                                                              | Study, knowledge and application practical | 6     | 11    |
| Tests Theory and practical tests | theoretical + practical | Mycobacterium                                                                                           | Study, knowledge and application practical | 6     | 12    |
| Tests Theory and practical tests | theoretical + practical | Introduction to Medical Virology                                                                        | Study, knowledge and application practical | 6     | 13    |
| Tests Theory and practical tests | theoretical + practical | Mycology                                                                                                | Study, knowledge and application practical | 6     | 14-15 |



## 11. Course Evaluation

distribution degree from 100 on according to Tasks. The person in charge With it The student like Preparation Daily and exams Daily and oral Monthly and editorial and reports...etc

5 presence And absence, 10 Practical exam monthly , 25 theoretical exam monthly , 60 exam ultimate

## 12. Learning and Teaching Resources

|                                                                                                                                                                                                                                                                                                                                                                                | Required Textbooks (Syllabus, if available) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| <ul style="list-style-type: none"><li>• Logan, NA, Hoffmaster, AR, Shadomy, SV, &amp; Stauffer, K. E. (2011). Bacillus and other aerobic endospore-forming bacteria. Manual of clinical microbiology, 381-402.</li><li>• Logan, N. A., &amp; Rodriguez-Díaz, M. (2006). Bacillus spp. and related genera. Principles and practice of clinical bacteriology, 139-158.</li></ul> | Main References                             |
|                                                                                                                                                                                                                                                                                                                                                                                | Recommended Supporting Books and References |
|                                                                                                                                                                                                                                                                                                                                                                                | Internet Websites                           |



## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>1.Course name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| Clinical Biochemistry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |
| <b>2.Course code</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| Atu_chmML212                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| <b>3.semester/year:second</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| 2024/2025 (Separate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| <b>4.Date this description was prepared</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| 18/8/2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
| <b>5.Available attendance forms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <p>Halls inside The process Theory For lectures Students presence(Face-to-Face / On-Campus): My presence1. and laboratories Academic</p> <p>(Online Asynchronous):synchronous not electronic2.</p> <p>time any in For students Available)Registered Lectures, files, video(educational Materials or Lectures</p> <p>To Vitality Chemistry Laboratories in Students presence(Practical / Laboratory-Based):practical3. My application The process and training experiments conduct</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |
| <b>Number of study hours (total) / Number of units (total)Y):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| .6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| 2 theoretical + 2 practical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| <b>Course Instructor Name:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| .7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| Name: Athmar Ali Kazim                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |
| Email:athmar.alichm@atu.edu.iq                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| <b>8.Course objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <p>gnitive Objectivescognitive Objectives:Firstly</p> <p>ality Chemistry in Basic In concepts The student identification1.</p> <p>ical science With And its relationship Clinical</p> <p>emical Interactions to understand from The student Empowerment2.</p> <p>And its relationship man body inside to speak that Vitality</p> <p>isfactory disturbances</p> <p>Chemical By analysis Private With knowledge The student supply3.</p> <p>ormones, Enzymes, proteins, Fats, sugars(Vitality ingredients</p> <p>ectrolytes</p> <p>ised Clinical For examinations Theory foundations clarification4.</p> <p>eases Diagnosis</p> <p>Laboratory Results explanation on ability The student Acquisition5.</p> <p>r the patient Clinical In the case connect it</p> <p>dern Developments Absorption on The student capacity development6.</p> <p>ical Chemistry and techniques Devices in</p> <p>ctical/Technical Skills By program Private Skills Objectives:secondly</p> <p>ectives)</p> <p>necessary Chemical And the detectors Solutions to prepare Mastery1.</p> <p>nical examinations</p> <p>vate Laboratory For devices practical Usage on The student training2.</p> <p>otoelectric Absorption measurement Devices like(Clinical In chemistry</p> <p>tomated Analysis Devices</p> | <b>Course objectives</b> |



line Clinical Tests procedure in The student Iskil development3.  
 n safety accurately  
 safety procedures following from The student Empowerment4.  
 oratory inside Vital security  
 d documentation registration on The student capacity development5.  
 d when Statistically And analyze it Laboratory Results  
 ing him that problems solution in The student skill Strengthening6.  
 ical Tests or experiments procedure during

#### 9. Teaching and learning strategies

And connect it Theory Concepts To explain: Interactive Lectures1.  
 .Clinical With applications  
 on Students For training: laboratory in practical education2.  
 .And safety accurately Devices And use Tests procedure  
 discussion during from: problems solution on The leader learning3.  
 .Tests results and analysis Clinical Cases  
 To small Groups within Students a job via: Cooperative learning4.  
 .collective And work communication skills enhance  
 and Scientific Search skills To develop: Short and reports Projects5.  
 And writing it Results analysis  
 Evaluation methods  
 and Theory Aspects To measure And the final Quarterly Exams1.  
 .cognitive  
 in The student performance To evaluate The process Reports2.  
 .Results registration Accuracy laboratory  
 .Laboratory Skills To measure (Practical Exams) The process Tests3.  
 The interaction To measure and discussions Safiya Participation4.  
 .For the material And understand it student  
 and analysis Search skills To evaluate Short Research or Projects5.  
 Scientific And writing

#### Strategy

#### 10. Course structure semester the first

| Evaluation method                                                                                                                                                                                                                                                                        | Learning method                                                                                                                                                     | Name of unit or topic                                                 | Required learning outcomes                                                                                                                                                           | watches                     | week      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|
| to choose Questions: theoretical side and , Article, Multiple from .Clinical condition questions evaluation: practical side• writing, laboratory in performance .small Projects, Laboratory Reports short Questions: Periodical Review• To follow loneliness all after students progress | Lectures Interactive with Visual Offers and drawings .Illustrative experiments• Operation in Laboratory with steps .Documented discussions• Clinical Cases To apply | Introduction Chemistry in rules, Clinical And Safety control .Quality | to 1. role understand Chemistry in Clinical diseases Diagnosis up-And follow .satisfactory Cases Perception2. Safety importance and Laboratory in the job ethics laboratory .Medical | 2 theoretical + 2 practical | the first |



|                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------|
|                                                                                                                                                                                                                                                                                            | <p>.Theory Programs Use• simulation For Interactive paths And metabolism the analyses Laboratory</p>                                                                                                                                                                     |                                                                    | <p>on Recognition3. adjust principles Internal Quality To and external accuracy ensure and reliability .Results rules application4. And use Safety prevention tools In a character correct way the job during .Laboratory Commitment5. , Professionally , confidentiality In And work during team spirit with Dealing and data Samples Laboratory</p>                                                                                                                                                                                                          |                                    |                   |
| <p>to choose Questions:theoretical side and , Article, Multiple from .Clinical condition questions evaluation:practical side• writing, laboratory in performance .small Projects, Laboratory Reports short Questions:Periodical Review• To follow onliness all after students progress</p> | <p>Lectures Interactive with Visual Offers and drawings .Illustrative experiments• Operation in Laboratory with steps .Documented discussions• Clinical Cases To apply .Theory Programs Use• simulation For Interactive paths And metabolism the analyses Laboratory</p> | <p>, water , Solutions . Ionic balance And degree (pH).acidity</p> | <p>to understand. Basic Properties And his For water And liar role For pregnant in Ionic materials Systems .Biological explanation2. balance concept And its Ionic in importance on Preservation the stability environment For cells Interior .and tissues knowledge3. relationship And ions between degree How to(pH)acidity And Measure it Its interpretation .results clarification4. to Mechanisms in acidity organize in including body ,buffersrole that and the , kidneys .lungs application5. Theory Concepts Clinical Cases on To evaluate impact</p> | <p>2 theoretical + 2 practical</p> | <p>the second</p> |



|                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                          |                                                                         |                                                                                                                                                                                                                                                                                                                                                             |                                    |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------|
| <p>to choose Questions:theoretical side and , Article, Multiple from .Clinical condition questions evaluation:practical side• writing, laboratory in performance .small Projects, Laboratory Reports</p> <p>short Questions:Periodical Review• To follow loneliness all after students progress</p> | <p>Lectures Interactive with Visual Offers and drawings .Illustrative experiments• Operation in Laboratory with steps .Documented discussions• Clinical Cases To apply .Theory Programs Use• simulation For Interactive paths And metabolism the analyses Laboratory</p> | <p>Com:enzymes , position , Classification and methods .Measurement</p> | <p>on pH Changes Yes Animal Jobs</p> <p>on Recognition1. Enzymes nature and its functions 2. Understanding a job mechanism and the Enzymes .Effective location knowledge3. Influential factors activity on .Enzymes role link4. In Enzymes operations and Metabolism .Clinical cases application5. in knowledge measurement Enzymes activity laboratory</p> | <p>2 theoretical + 2 practical</p> | <p>the third</p> |
| <p>to choose Questions:theoretical side and , Article, Multiple from .Clinical condition questions evaluation:practical side• writing, laboratory in performance .small Projects, Laboratory Reports</p> <p>short Questions:Periodical Review• To follow loneliness all after students progress</p> | <p>Lectures Interactive with Visual Offers and drawings .Illustrative experiments• Operation in Laboratory with steps .Documented discussions• Clinical Cases To apply .Theory Programs Use• simulation For Interactive paths And metabolism analyses the Laboratory</p> | <p>Enzymes and Clinical its implications .Diagnosis in</p>              | <p>on Recognition1. Enzymes features and its functions .Vitality 2. Understanding a job mechanism and the Enzymes .Effective location knowledge3. Influential factors activity on .Enzymes activity link4. In cases Enzymes And satisfactory its significance .Clinical application5. measurement Enzymes activity Analysis In laboratory</p>               | <p>2 theoretical + 2 practical</p> | <p>Fourth</p>    |
| <p>to choose Questions:theoretical side and , Article, Multiple from .Clinical condition questions evaluation:practical side• writing, laboratory in performance .small Projects, Laboratory Reports</p> <p>short Questions:Periodical Review• To follow loneliness all after</p>                   | <p>Lectures Interactive with Visual Offers and drawings .Illustrative experiments• Operation in Laboratory with steps</p>                                                                                                                                                | <p>Carbohydrates Composition: and jobs Vitality</p>                     | <p>1. Define Basic structures For sugars and Monotheism and the duality .multiple Jobs2. Explain in carbohydrates .body</p>                                                                                                                                                                                                                                 | <p>2 theoretical + 2 practical</p> | <p>Fifth</p>     |



|                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                               |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------|
| students progress                                                                                                                                                                                                                                                                                            | .Documented discussions*<br>Clinical Cases<br>To apply<br>.Theory<br>Programs Use*<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory                                                                                                                                                  |                                                                                         | Paths3. Explain<br>Also<br>lik(carbohydrates<br>decomposition e<br>turn, Diabetes<br>)Crips<br>connects4.<br>Also disturbances<br>lik(carbohydrates<br>On the )Diabetes e<br>Clinical side                                                                                                                                                                                                         |                                      |               |
| to choose Questions:theoretical side<br>and , Article, Multiple from<br>.Clinical condition questions<br>evaluation:practical side*<br>writing, laboratory in performance<br>.small Projects, Laboratory Reports<br>short Questions:Periodical Review*<br>To follow lonliness all after<br>students progress | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>.Illustrative<br>experiments*<br>Operation in<br>Laboratory with<br>steps<br>.Documented<br>discussions*<br>Clinical Cases<br>To apply<br>.Theory<br>Programs Use*<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory | Also<br>carbohydrates<br>Paths{<br>decomposition<br>, Storage,<br>production<br>)Energy | 1. Define<br>Basicstructures<br>For sugars<br>and Monotheism<br>and the duality<br>.multiple<br>Jobs2. Explain<br>in carbohydrates<br>.body<br>Paths3. Explain<br>Also<br>lik(carbohydrates<br>decomposition e<br>turn, Diabetes<br>)Crips<br>connects4.<br>Also disturbances<br>lik(carbohydrates<br>On the )Diabetes e<br>Clinical side                                                          | 2<br>theoretical<br>+ 2<br>practical | Sixth         |
| to choose Questions:theoretical side<br>and , Article, Multiple from<br>.Clinical condition questions<br>evaluation:practical side*<br>writing, laboratory in performance<br>.small Projects, Laboratory Reports<br>short Questions:Periodical Review*<br>To follow lonliness all after<br>tsstuden progress | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>.Illustrative<br>experiments*<br>Operation in<br>Laboratory with<br>steps<br>.Documented<br>discussions*<br>Clinical Cases<br>To apply<br>.Theory<br>Programs Use*<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory | ClinicalTests<br>For<br>carbohydrates<br><br>(Glucose,<br>HbA1C.                        | Recognition1.<br>Tests on<br>Laboratory<br>For Basic<br>li(carbohydrates<br>measurement ke<br>a test, Glucose<br>, Glucose to bear<br>hemoglobin<br>)glycosylated<br>explanation2.<br>Results<br>And Laboratory<br>In the connect it<br>and Health case<br>disturbances<br>.Metabolism<br>role analysis3.<br>This is amazing<br>in Tests<br>And Diagnosis<br>up-follow<br>For Clinical<br>patients | 2<br>theoretical<br>+ 2<br>practical | Seventh       |
| to choose Questions:theoretical side<br>and , Article, Multiple from<br>.Clinical condition questions<br>evaluation:practical side*<br>writing, laboratory in performance                                                                                                                                    | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>.Illustrative                                                                                                                                                                                                                                                | and illnesses<br>disorders<br>carbohydrates<br>disease{<br>Diabetes                     | on Recognition1.<br>illness Types<br>and Diabetes<br>Also disorders<br>carbohydrates                                                                                                                                                                                                                                                                                                               | 2<br>theoretical<br>+ 2<br>practical | The<br>eighth |



|                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                          |                                                             |                                                                                                                                                                                                                                                                                                                                                                                                           |                                                |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------|
| <p>small Projects, Laboratory Reports</p> <p>short Questions: Periodical Review•<br/>To follow onliness all after students progress</p>                                                                                                                                                                              | <p>experiments•<br/>Operation in Laboratory with steps<br/>.Documented discussions•<br/>Clinical Cases To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive paths<br/>And metabolism the analyses<br/>Laboratory</p>                                                                                                                | <p>,Hypoglycemia ).</p>                                     | <p>.Different<br/>2. Interpretation<br/>Mechanisms satisfactory<br/>with Associated disturbances<br/>carbohydrates on and its impact<br/>.body<br/>Tests3. Binding<br/>For Laboratory examinations<br/>By Clinical<br/>And diagnosis<br/>This is up-follow<br/>diseases amazing</p>                                                                                                                       |                                                |                 |
| <p>to choose Questions:theoretical side and , Article, Multiple from<br/>.Clinical condition questions<br/>evaluation:practical side•<br/>writing, laboratory in performance<br/>small Projects, Laboratory Reports</p> <p>short Questions:Periodical Review•<br/>To follow onliness all after students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory with<br/>steps<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>Com:proteins<br/>, position<br/>and , Types<br/>jobs</p> | <p>on1. Recognition<br/>The Composition<br/>For chemist<br/>and proteins<br/>levels<br/>Pri(Structuralism<br/>High , mary<br/>Trilogy, school<br/>)Fourth<br/>2. Explanation<br/>For Vitality Jobs<br/>in proteins<br/>, Enzymes(body<br/>, Hormones<br/>, transfer<br/>)Structure</p>                                                                                                                    | <p>2<br/>theoretical<br/>+ 2<br/>practical</p> | <p>Ninth</p>    |
| <p>to choose Questions:theoretical side and , Article, Multiple from<br/>.Clinical condition questions<br/>evaluation:practical side•<br/>writing, laboratory in performance<br/>small Projects, Laboratory Reports</p> <p>short Questions:Periodical Review•<br/>To follow onliness all after students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory with<br/>steps<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>Protein<br/>metabolism<br/>and acids<br/>.Amino acid</p> | <p>Paths to explain1.<br/>Amino acids Also<br/>in acid<br/>disarmamen(body<br/>, The Secretary t<br/>transformation<br/>)Urea to Nitrogen<br/>role explanation2.<br/>Amino acid acids<br/>production in<br/>and Energy<br/>Vitality vehicles<br/>.Other<br/>3. Binding<br/>Also disturbances<br/>vinyl like(proteins<br/>or Ketonuria<br/>turn illnesses<br/>With )Urea<br/>applications<br/>Clinical</p> | <p>2<br/>theoretical<br/>+ 2<br/>practical</p> | <p>tenth</p>    |
| <p>to choose Questions:theoretical side and , Article, Multiple from</p>                                                                                                                                                                                                                                             | <p>Lectures<br/>Interactive with</p>                                                                                                                                                                                                                                                                                                                     | <p>ClinicalTests<br/>For</p>                                | <p>on Recognition1.<br/>Laboratory Tests</p>                                                                                                                                                                                                                                                                                                                                                              | <p>2<br/>theoretical</p>                       | <p>eleventh</p> |



|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                          |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------|
| <p>Clinical condition questions evaluation:practical side•<br/>writing, laboratory in performance<br/>small Projects, Laboratory Reports<br/>short Questions:Periodical Review•<br/>To follow lonliness all after<br/>students progress</p>                                                                                | <p>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory with<br/>steps<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p>                                   | <p>(Total proteins<br/>Protein,<br/>Albumin,<br/>Globulin).</p>                                   | <p>like(For proteins<br/>kidney Protein<br/>, Albumin<br/>, Globulins<br/>Protein analysis<br/>)Poly<br/><br/>explanation2.<br/>Results<br/>And Laboratory<br/>with connect it<br/>disturbances<br/>like(Clinical<br/>, liver illnesses<br/>, kidneys<br/>)infections<br/><br/>role analysis3.<br/>This is amazing<br/>Diagnosis in Tests<br/>up-And follow<br/>For Therapeutic<br/>patients</p>                    | <p>+ 2<br/>practical</p>                       |                   |
| <p>to choose Questions:theoretical side<br/>and , Article, Multiple from<br/>.Clinical condition questions<br/>evaluation:practical side•<br/>writing, laboratory in performance<br/>small Projects, Laboratory Reports<br/>short Questions:Periodical Review•<br/>To follow lonliness all after<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory with<br/>steps<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>disturbances<br/>For Clinical<br/>proteins<br/>(Mainutrition,<br/>Nephrotic<br/>Syndrome).</p> | <p>on1. Recognition<br/>disturbances<br/>Clinical<br/>With Associated<br/>loss like(proteins<br/>more, Albumin<br/>, Globulins<br/>and liver illnesses<br/>)the kidneys<br/><br/>explanation2.<br/>This is impact<br/>amazing<br/>on disturbances<br/>and body Jobs<br/>operations<br/>.Vitality<br/><br/>results3. Binding<br/>Laboratory Tests<br/>By diagnosis<br/>And Medical<br/>up-follow<br/>Therapeutic</p> | <p>2<br/>theoretical<br/>+ 2<br/>practical</p> | <p>twelfth</p>    |
| <p>to choose Questions:theoretical side<br/>and , Article, Multiple from<br/>.Clinical condition questions<br/>evaluation:practical side•<br/>writing, laboratory in performance<br/>small Projects, Laboratory Reports<br/>short Questions:Periodical Review•<br/>To follow lonliness all after<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>with Laboratory<br/>steps<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•</p>                                                                                                 | <p>reviewDiscuss<br/>a clinical case<br/>related to<br/>carbohydrates<br/>and proteins.</p>       | <p>And 1. Analysis<br/>Cases review<br/>Related Clinical<br/>with disturbances<br/>carbohydrates<br/>and proteins<br/>Results link2.<br/>In Laboratory<br/>physiology<br/>and satisfactory<br/>.Medical diagnosis<br/>3. Development<br/>decision take skills<br/>building Clinical<br/>Data on</p>                                                                                                                 | <p>2<br/>theoretical<br/>+ 2<br/>practical</p> | <p>thirteenth</p> |



|                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                               |                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                |
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|                                                                                                                                                                                                                                                                                                              | simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory                                                                                                                                                                                                                                        |                                                                    | The Laboratory<br>theory                                                                                                                                                                                                                                                                                                                                                                                |                                      |                |
| to choose Questions:theoretical side<br>and , Article, Multiple from<br>.Clinical condition questions<br>evaluation:practical side•<br>writing, laboratory in performance<br>.small Projects, Laboratory Reports<br>short Questions:Periodical Review•<br>To follow lonliness all after<br>students progress | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory with<br>steps<br>.Documented<br>discussions•<br>Clinical Cases<br>To apply<br>.Theory<br>Programs Use•<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory | adjust.<br>Quality(Qualit<br>iny Control)<br>Analysis<br>.Clinical | on Recognition1.<br>Basic Principles<br>Quality adjust To<br>Laboratories in<br>(Precision, Clinical<br>Accuracy, Control).<br>explanation2.<br>evaluation Ways<br>And monitoring<br>Tests quality<br>like(Laboratory<br>Samples Use<br>and roads Control<br>)Statistics<br>link3.<br>Applications<br>Quality adjust<br>and Reliable<br>in accuracy<br>Clinical Results<br>decision And take<br>Medical | 2<br>theoretical<br>+ 2<br>practical | fourteent<br>h |
|                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                               | Final exam<br>(theoretical)                                        |                                                                                                                                                                                                                                                                                                                                                                                                         | 2<br>theoretical<br>+ 2<br>practical | fifteenth      |
|                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                               |                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                |



## Second semester \ Atu\_chmML222

| Evaluation method                                                                                                                                                                                                                                                                                                                       | Learning method                                                                                                                                                                                                                                                                                                                                               | Name of unit or topic                                                         | Required learning outcomes                                                                                                                                                                                                                                                                                                                                                                   | watches                                                        | week              |
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| <p>to Questions:theoretical side<br/> , Article, Multiple from choose<br/> .Clinical condition questions and evaluation:practical side•<br/> , laboratory in performance<br/> , Laboratory Reports writing<br/> .small Projects</p> <p>Questions:Periodical Review•<br/> To follow lonliness all after short students progress</p>      | <p>Lectures<br/> Interactive with<br/> Visual Offers<br/> and drawings<br/> .Illustrative experiments•<br/> Operation in Laboratory<br/> steps with<br/> .Documented discussions•<br/> Clinical Cases<br/> To apply<br/> .Theory<br/> Programs Use•<br/> simulation<br/> For Interactive<br/> paths<br/> And metabolism<br/> the analyses<br/> Laboratory</p> | <p>Fats:<br/> composition,<br/> types, and<br/> biological<br/> functions</p> | <p>Types1.Describes<br/> And For fats Different<br/> its structure<br/> .Chemical<br/> Jobs It is clear2.<br/> .For fats Vitality<br/> Explains3.<br/> digest Mechanisms<br/> .Fats and absorption<br/> Tracks Explains4.<br/> For Metabolism<br/> , oxidation-Beta(fats<br/> ).Fats formation<br/> impact5. Discuss<br/> on Fats disturbances<br/> hardening like(health<br/> )arteries</p> | <p>2<br/> theo<br/> retic<br/> al + 2<br/> pract<br/> ical</p> | <p>the first</p>  |
| <p>to Questions:theoretical side<br/> , Article, Multiple from choose<br/> .Clinical condition and questions<br/> evaluation:practical side•<br/> , laboratory in performance<br/> , Laboratory Reports writing<br/> .small Projects</p> <p>Questions:Periodical Review•<br/> To follow lonliness all after short students progress</p> | <p>Lectures<br/> Interactive with<br/> Visual Offers<br/> and drawings<br/> .Illustrative experiments•<br/> Operation in Laboratory<br/> steps with<br/> .Documented discussions•<br/> Clinical Cases<br/> To apply<br/> .Theory<br/> Programs Use•<br/> simulation<br/> For Interactive<br/> paths<br/> And metabolism<br/> the analyses<br/> Laboratory</p> | <p>Fat<br/> metabolism<br/> and energy<br/> pathways</p>                      | <p>TypesDescribes<br/> And For fats Different<br/> its structure<br/> .Chemical<br/> Jobs It is clear2.<br/> .For fats Vitality<br/> Explains3.<br/> digest Mechanisms<br/> .Fats and absorption<br/> Tracks Explains4.<br/> For Metabolism<br/> , oxidation-Beta(fats<br/> ).Fats formation<br/> Effect of 5. Discuss<br/> on Fats disorders<br/> hardening like(health<br/> )arteries</p>  | <p>2<br/> theo<br/> retic<br/> al + 2<br/> pract<br/> ical</p> | <p>the second</p> |
| <p>to Questions:theoretical side<br/> , Article, Multiple from choose<br/> .Clinical condition and questions<br/> evaluation:practical side•<br/> , laboratory in performance<br/> , Laboratory Reports writing<br/> .small Projects</p>                                                                                                | <p>Lectures<br/> Interactive with<br/> Visual Offers<br/> and drawings<br/> .Illustrative experiments•<br/> Operation in Laboratory</p>                                                                                                                                                                                                                       | <p>Hormones</p>                                                               | <p>Hormones1. Defines<br/> .And its types<br/> It is clear2.<br/> a job mechanism<br/> cells in Hormones<br/> .Targeted<br/> glands role3. Explain</p>                                                                                                                                                                                                                                       | <p>2<br/> theo<br/> retic<br/> al + 2<br/> pract<br/> ical</p> | <p>the third</p>  |



|                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                          |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                           |               |
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| <p>Questions:Periodical Review•<br/>To follow lonliness all after short students progress</p>                                                                                                                                                                                                                                    | <p>steps with<br/>.Documented discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive paths<br/>And metabolism the analyses<br/>Laboratory</p>                                                                                                                                                     |                                                          | <p>to organize in deaf<br/>.Vitality Operations</p> <p>Analyze4.<br/>disturbances<br/>And its Hormonal<br/>Clinical impact</p>                                                                                                                                                                                                                                                                                     |                                                           |               |
| <p>to Questions:theoretical side<br/>, Article, Multiple from choose<br/>.Clinical condition and questions<br/>evaluation:practical side•<br/>, laboratory in performance<br/>, Laboratory Reports writing<br/>.small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>analyses the<br/>Laboratory</p> | <p>Liver<br/>functions and<br/>biochemical<br/>tests</p> | <p>Jobs on Recognition1.<br/>For the liver Vitality<br/>in And his role<br/>And metabolism<br/>.toxins remove</p> <p>Tests explanation2.<br/>To Laboratory<br/>Jobs evaluate<br/>ALT, AST, like(liver<br/>Protein, BilirubinALP,<br/>)kidney</p> <p>Analysis results link3.<br/>In Vitality Chemical<br/>In cases the liver<br/>and satisfactory<br/>Medical diagnosis</p>                                         | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>Fourth</p> |
| <p>to Questions:theoretical side<br/>, Article, Multiple from choose<br/>.Clinical condition and questions<br/>evaluation:practical side•<br/>, laboratory in performance<br/>, Laboratory Reports writing<br/>.small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>Heart<br/>functions and<br/>cardiac<br/>enzymes</p>   | <p>);points</p> <p>Jobs on Recognition1.<br/>For the heart Vitality<br/>muscle And the role<br/>The cycle in Cardiac<br/>.bloody</p> <p>Tests explanation2.<br/>Enzymes<br/>CK-MB, like(Cardiac<br/>And its Troponin<br/>in Clinical significance<br/>the illnesses Diagnosis<br/>.heart</p> <p>Tests results3. Binding<br/>In cases Laboratory<br/>And take satisfactory<br/>Medical decision<br/>appropriate</p> | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>Fifth</p>  |
| <p>to Questions:theoretical side<br/>, Article, Multiple from choose<br/>.Clinical condition and questions<br/>evaluation:practical side•</p>                                                                                                                                                                                    | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings</p>                                                                                                                                                                                                                                                                                  | <p>Integrated<br/>metabolism</p>                         | <p>1. Explains<br/>between relationship<br/>carbohydrates Also<br/>and proteins and fats</p>                                                                                                                                                                                                                                                                                                                       | <p>2<br/>theo<br/>retic<br/>al + 2</p>                    | <p>Sixth</p>  |



|                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                          |                                    |                                                                                                                                                                                                                                                                                                                                                                  |                                                           |                       |
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| <p>laboratory in performance<br/>Laboratory Reports writing<br/>small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short<br/>students progress</p>                                                                                                                                                | <p>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p>                                                                      |                                    | <p>eater after<br/>2. Explain<br/>Transformations<br/>Fasting in Metabolism<br/>.tall<br/>Cases in metabolism3.<br/>like{satisfactory<br/>, Obesity, Diabetes<br/>)Cancer<br/>Changes connects4.<br/>Palmer Metabolism</p>                                                                                                                                       | <p>pract<br/>ical</p>                                     |                       |
| <p>to Questions:theoretical side<br/>, Article, Multiple from choose<br/>.Clinical condition and questions<br/>evaluation:practical side•<br/>, laboratory in performance<br/>, Laboratory Reports writing<br/>small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>Electrolytes</p>                | <p>on Recognition1.<br/>For Home Types<br/>And its electrolytes<br/>balance in role<br/>and pressure Liquids<br/>.Osmosis<br/>explanation2.<br/>to Mechanisms<br/>Electrolytes organize<br/>kidneys job(body in<br/>)and hormones<br/>analysis3.<br/>disturbances<br/>And Electrolytes<br/>By connect it<br/>Clinical connnotations<br/>Laboratory And tests</p> | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>Seventh</p>        |
| <p>to Questions:theoretical side<br/>, Article, Multiple from choose<br/>.Clinical condition and questions<br/>evaluation:practical side•<br/>, laboratory in performance<br/>, Laboratory Reports writing<br/>small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>.Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>.Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>.Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>Trace and<br/>rare elements</p> | <p>Jobs Explains .1<br/>, Iron, Calcium<br/>...Potassium, sodium<br/>connects2.<br/>increase/deficiency<br/>with diseases</p>                                                                                                                                                                                                                                    | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>The<br/>eighth</p> |



|                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                       |                                                                            |                                                                                                                                                                                                                                                                                                                                    |                                                           |                 |
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| <p>to Questions:theoretical side<br/>Article, Multiple from choose<br/>Clinical condition and questions<br/>evaluation:practical side•<br/>laboratory in performance<br/>Laboratory Reports writing<br/>small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>vitamins</p>                                                            | <p>vitamins1. Classifies<br/>water in melted to<br/>.Fats in And melted<br/>Jobs He specifies2.<br/>.vitamin per Vitality<br/>loss effect It is clear3.<br/>.body on vitamins<br/>role Explains4.<br/>balance in minerals<br/>.Vital<br/>between connects5.<br/>vitamins more/loss<br/>With and minerals<br/>Clinical symptoms</p> | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>Ninth</p>    |
| <p>to Questions:theoretical side<br/>Article, Multiple from choose<br/>Clinical condition and questions<br/>evaluation:practical side•<br/>laboratory in performance<br/>Laboratory Reports writing<br/>small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>Theory<br/>Programs Use•<br/>simulation<br/>For Interactive<br/>paths<br/>And metabolism<br/>the analyses<br/>Laboratory</p> | <p>tricarboxylic<br/>acid cycle</p>                                        | <p>The steps1. Explains<br/>.cycle<br/>Her role Explains2.<br/>metabolism in Central</p>                                                                                                                                                                                                                                           | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>tenth</p>    |
| <p>to Questions:theoretical side<br/>Article, Multiple from choose<br/>Clinical condition and questions<br/>evaluation:practical side•<br/>laboratory in performance<br/>Laboratory Reports writing<br/>small Projects</p> <p>Questions:Periodical Review•<br/>To follow lonliness all after short<br/>students progress</p> | <p>Lectures<br/>Interactive with<br/>Visual Offers<br/>and drawings<br/>Illustrative<br/>experiments•<br/>Operation in<br/>Laboratory<br/>steps with<br/>Documented<br/>discussions•<br/>Clinical Cases<br/>To apply<br/>Theory<br/>Programs Use•<br/>simulation<br/>For Interactive</p>                                                              | <p>Respiratory<br/>chain or<br/>electron<br/>transport<br/>chain (ETC)</p> | <p>the to explain1.<br/>For Basic components<br/>transfer the series<br/>I-complexes(electron<br/>, Cytochromes ,IV<br/>Q).enzyme<br/>explanation2.<br/>mechanism<br/>electrons transmission<br/>And production<br/>viaATPThe<br/>Phosphorylation<br/>.oxidative<br/>impact analysis3.<br/>The disturbances</p>                    | <p>2<br/>theo<br/>retic<br/>al + 2<br/>pract<br/>ical</p> | <p>eleventh</p> |



|                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                               |                                        |                                                                                                                                                                                                                                                                                                                                    |                                               |            |
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|                                                                                                                                                                                                                                                                                                                      | paths<br>And metabolism<br>the analyses<br>Laboratory                                                                                                                                                                                                                                                                         |                                        | on Respiratory series<br>Energy production<br>with And connect it<br>Clinical diseases                                                                                                                                                                                                                                             |                                               |            |
| to Questions:theoretical side<br>, Article, Multiple from choose<br>,Clinical condition and questions<br>evaluation:practical side•<br>,laboratory in performance<br>, Laboratory Reports writing<br>,small Projects<br><br>Questions:Periodical Review•<br>To follow lonliness all after short<br>students progress | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>,Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>steps with<br>,Documented<br>discussions•<br>Clinical Cases<br>To apply<br>,Theory<br>Programs Use•<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory | Nitrogenous<br>bases                   | on Recognition1.<br>Rules<br>A:Purines(nitrogenous<br>-Guanin, denine<br>, Cytosine:pyrimidines<br>,).Uracil, Thymine<br><br>road explanation2.<br>Rules correlation<br>And its nitrogenous<br>,G≡C,(A=Tintegration<br>RNA).inA=U<br><br>Rules role analysis3,<br>save in nitrogenous<br>And transfer<br>genetic Information       | 2<br>theo<br>retic<br>al + 2<br>pract<br>ical | twelfth    |
| to Questions:theoretical side<br>, Article, Multiple from choose<br>,Clinical condition questions and<br>evaluation:practical side•<br>,laboratory in performance<br>, Laboratory Reports writing<br>,small Projects<br><br>Questions:Periodical Review•<br>To follow lonliness all after short<br>students progress | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>,Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>steps with<br>,Documented<br>discussions•<br>Clinical Cases<br>To apply<br>,Theory<br>Programs Use•<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory | Purine and<br>pyrimidine<br>metabolism | Tracks to explain1.<br>And To create Basic<br>Purines dismantling<br>,body in Pyrimidines<br><br>role clarification2.<br>This is amazing<br>formation in Tracks<br>and acids nucleotides<br>,nuclear<br><br>disturbances link3.<br>, Gout like(metabolism<br>With )Aciduria Orotic<br>Clinical applications<br>laboratoryAnd tests | 2<br>theo<br>retic<br>al + 2<br>pract<br>ical | thirteenth |
| to Questions:theoretical side<br>, Article, Multiple from choose<br>,Clinical condition and questions<br>evaluation:practical side•<br>,laboratory in performance<br>, Laboratory Reports writing<br>,small Projects<br><br>Questions:Periodical Review•<br>To follow lonliness all after short<br>students progress | Lectures<br>Interactive with<br>Visual Offers<br>and drawings<br>,Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>steps with<br>,Documented<br>discussions•<br>Clinical Cases                                                                                                                                   | nucleic acids                          | identification1.<br>For Basic structure<br>and , nucleotides<br>discrimination<br>RNA.andDNAbetween<br><br>to explain2.<br>And its DNAdoubled<br>With relationship<br>with, mutations<br>practical clarification<br>And the role Copy                                                                                              | 2<br>theo<br>retic<br>al + 2<br>pract<br>ical | fourteenth |



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|                                                                                                                                                                                                                                                                                                                                       | To apply<br>.Theory<br>Programs Use•<br>simulation<br>For Interactive<br>paths<br>And metabolism<br>the analyses<br>Laboratory |                             | .Enzymes<br>explanation3.<br>And Translation<br>Protein formation<br>role And the<br>tRNAand Ribosomes |                                               |           |
|                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                | Final exam<br>(theoretical) |                                                                                                        | 2<br>theo<br>retic<br>al + 2<br>pract<br>ical | fifteenth |
| Course Evaluation .11                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |                             |                                                                                                        |                                               |           |
| The semester grade (100) is distributed as follows:The following: 40 annual endeavors divided into (10 practical points + 25 theoretical points + 5 activity points) + 60 final exam points (25 practical exam points + 35 theoretical exam points)                                                                                   |                                                                                                                                |                             |                                                                                                        |                                               |           |
| 12. Learning and teaching resources                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                             |                                                                                                        |                                               |           |
| Lippincott Illustrated Reviews: Biochemistry, 8th Edition (2023)                                                                                                                                                                                                                                                                      |                                                                                                                                |                             | Required textbooks(methodologythatI found it                                                           |                                               |           |
| Lehninger Principles of Biochemistry<br>Harper's Illustrated Biochemistry<br>Biochemistry (by Berg, Tymoczko, Gatto, Stryer)                                                                                                                                                                                                          |                                                                                                                                |                             | Main references(Sources)                                                                               |                                               |           |
| solid global research                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |                             | Recommended supporting books and references (scientific journals, reports...)                          |                                               |           |
| Google Chrome, YouTube                                                                                                                                                                                                                                                                                                                |                                                                                                                                |                             | the reviewerelectronic,websites                                                                        |                                               |           |
| .laboratory in and technologies Devices Latest to merge•<br>with Compatible including Vitality Chemistry content to update•<br>.Scientific Research Latest<br>and analysis Vitality Chemistry between Linking Strengthening•<br>.Clinical<br>in Those who wish For students Advanced Optional Units addition•<br>Flour Specialization |                                                                                                                                |                             | Curriculum Development Plan                                                                            |                                               |           |



## Course Description Form

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>1. Course name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |
| Theoretical physiology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |
| <b>2. Course code \ Atu_chmML213</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |
| <b>3. the chapter/year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
| 2024/2025 (quarterly)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |
| <b>4. Date this description was prepared</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   |
| 17\8\2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |
| <b>5. Available attendance forms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |
| My presence 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |
| <b>6. Number of study hours(kidney)/Number of units(everyoneY)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
| 30hour(2Hours per week)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |
| <b>7. Course Instructor Name(If more than one name is mentioned)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |
| the name: Prof. Dr. Abdul Samad Aliwi Hassan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   |
| Email: samadovaabditch@atu.edu.iq                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| <b>8. Course objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |
| <ul style="list-style-type: none"> <li><b>Cognitive objectives:</b> <ol style="list-style-type: none"> <li>1- ATo learn about the components of the curriculumtheoreticalFor your informationPhysiology .</li> <li>2- Get to knowRules and principles of human physiology.</li> <li>3- Get to knowPhysiological diseases and ailments of all body organs.</li> </ol> </li> <li><b>Program skill objectives:</b> <ul style="list-style-type: none"> <li>✓ Understanding the basics of physiology.</li> <li>✓ Linking physiology and tissues in the same field.</li> <li>✓ Knowing the methods of diagnosing pathological conditions related to physiology.</li> </ul> </li> </ul> | Course objectives |
| <b>9. Teaching and learning strategies</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
| <ul style="list-style-type: none"> <li>• AFor theoretical lectures Private.</li> <li>• AView videos of foreign universitiesTo explain the curriculum.</li> <li>• Review references and related books.</li> </ul> <p><b>Evaluation methods:</b></p> <ul style="list-style-type: none"> <li>• AFor formative assessment.</li> <li>• Asking questions.</li> <li>• Exams.</li> </ul>                                                                                                                                                                                                                                                                                                 | Strategy          |



**Course structure  
semester the first**

| <b>Evaluation method</b>           | <b>Learning method</b>                               | <b>Name of unit or topic</b> | <b>Required learning outcomes</b> | <b>watches</b> | <b>week</b> |
|------------------------------------|------------------------------------------------------|------------------------------|-----------------------------------|----------------|-------------|
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Introduction                 | Get to know the material          | 2              | the first   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Neurophysiology              | Nerve physiology                  | 2              | the second  |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Nervous system physiology    | Physiology of the nervous system  | 2              | the third   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Endocrine glands physiology  | Physiology of endocrine glands    | 2              | Fourth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Muscles physiology           | Muscle physiology                 | 2              | Fifth       |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Body fluids physiology       | Physiology of body fluids         | 2              | Sixth       |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Blood physiology             | Physiology of blood               | 2              | Seventh     |
| Overall                            | Use of the whiteboard                                | Blood physiology 2           | Physiology of blood               | 2              | The eighth  |



|                                    |                                                      |                               |                                                |   |            |
|------------------------------------|------------------------------------------------------|-------------------------------|------------------------------------------------|---|------------|
| RatingOral and theoretical         | and educational display screen                       |                               | components                                     |   |            |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Heart physiology              | Physiology of the heart                        | 2 | Ninth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Circulatory system physiology | Physiology of the circulatory system           | 2 | tenth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Lungs physiology              | Physiology of the lungs                        | 2 | eleventh   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Respiration physiology        | Physiology of breathing                        | 2 | twelfth    |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Kidneys physiology            | Physiology of the kidneys                      | 2 | thirteenth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Urinary system physiology     | Physiology of the urinary system               | 2 | fourteenth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Acid-base balance physiology  | Physiology of acid-base balance in the kidneys | 2 | fifteenth  |

**Second semester \ Atu\_chmML223**

| <b>Evaluation method</b>           | <b>Learning method</b>                               | <b>Name of unit or topic</b>          | <b>Required learning outcomes</b>            | <b>watches</b> | <b>week</b> |
|------------------------------------|------------------------------------------------------|---------------------------------------|----------------------------------------------|----------------|-------------|
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Liver physiology                      | Physiology of the liver                      | 2              | the first   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Pancreas physiology                   | Pancreatic physiology                        | 2              | the second  |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Stomach physiology                    | Physiology of the stomach                    | 2              | the third   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Small bowel physiology                | Physiology of the small intestine            | 2              | Fourth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Male reproductive system physiology   | Physiology of the male reproductive system   | 2              | Fifth       |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Female reproductive system physiology | Physiology of the female reproductive system | 2              | Sixth       |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Large intestine physiology            | Physiology of the large intestine            | 2              | Seventh     |



|                                    |                                                      |                          |                                  |   |            |
|------------------------------------|------------------------------------------------------|--------------------------|----------------------------------|---|------------|
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Special sense physiology | Physiology of the special senses | 2 | The eighth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Stress physiology        | Physiology of stress             | 2 | Ninth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Pregnancy physiology     | Physiology of pregnancy          | 2 | tenth      |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Bones physiology         | Bone physiology                  | 2 | eleventh   |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Skin physiology          | skin physiology                  | 2 | twelfth    |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Hormones physiology      | Physiology of hormones           | 2 | thirteenth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display screen | Lymph glands physiology  | Physiology of the lymph nodes    | 2 | fourteenth |
| Overall RatingOral and theoretical | Use of the whiteboard and educational display        | Special sense physiology | Physiology of the special senses | 2 | fifteenth  |



|                                                                                                                                   |  |                                                                                |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------|--|--|
| screen                                                                                                                            |  |                                                                                |  |  |
| <b>11. Course Evaluation</b>                                                                                                      |  |                                                                                |  |  |
| Semester grade(100) Distributed in the form following:                                                                            |  |                                                                                |  |  |
| 25+15+35+25                                                                                                                       |  |                                                                                |  |  |
| <b>12. Learning and teaching resources</b>                                                                                        |  |                                                                                |  |  |
| Davis and Davis (2000). Medical physiology                                                                                        |  | Required textbooks(methodology that I found)                                   |  |  |
| A.S.U. Hassan (2021). General physiology                                                                                          |  | Main references(Sources)                                                       |  |  |
| Applied physiology journal<br>Medical physiology journal<br>American journal of physiology                                        |  | Recommended supporting books and references(Scientific journals, reports.... ) |  |  |
| PubMed sites<br>Wikipedia                                                                                                         |  | the reviewer electronic, websites                                              |  |  |
| <ul style="list-style-type: none"> <li>Monthly update</li> <li>Integrating national research</li> <li>Related seminars</li> </ul> |  | <b>Curriculum Development Plan</b>                                             |  |  |



## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1. Course name Histology Histology )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
| 2. Course code \ Atu_chmML214                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |
| 3. semester/year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |
| 2024/2025 (Separate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
| 4. Date this description was prepared \ 17\8\2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |
| 5. Available attendance forms \ My presence 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |
| 6. Number of study hours (total) / Number of units (total) Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
| 6 hours per week / 4 units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |
| 7. Name of the course administrator (if more than one name is mentioned)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |
| the name: Mr. Hussein Sattar Rabbat<br>Email: hussaein.rebat@atu.edu.iq<br>the name:<br>Email :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |
| 8. Course objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
| <ul style="list-style-type: none"> <li>Cognitive objectives           <ol style="list-style-type: none"> <li>Understanding tissue structure</li> <li>Study of tissue functions</li> <li>Student definition in types cells Basic</li> </ol>           And classify those cells According to the study of the shape cells The problem is that tissues And the job Basic For this cells.         </li> <li>Program skill objectives           <ol style="list-style-type: none"> <li>Developing microscopic examination skills</li> <li>Microscopic identification of tissue and cell types</li> <li>Application of textile techniques</li> </ol> </li> </ul> | Course objectives |
| 9. Teaching and learning strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |
| <ul style="list-style-type: none"> <li>Theoretical and practical learning</li> <li>Self-learning</li> <li>Learning using multimedia such as using educational platforms.</li> </ul> Evaluation methods <ul style="list-style-type: none"> <li>Tests and assignments</li> <li>Research project</li> <li>Discussions</li> </ul>                                                                                                                                                                                                                                                                                                                              | Strategy          |



10. **Course structure**  
**semester the first**

| Evaluation method                                                                                                            | Learning method                                                                                                                     | Name of unit or topic                                                  | Required learning outcomes                                                                 | watches | week       |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------|------------|
| <ul style="list-style-type: none"> <li>• Tests and assignments</li> <li>• Research project</li> <li>• Discussions</li> </ul> | <ul style="list-style-type: none"> <li>• Learning with lectures</li> <li>• interactive learning</li> <li>• Self-learning</li> </ul> | Introduction to histology, tissue classification and slide preparation | Understand the importance of tissues, know their types, and how to prepare a tissue slide. | 6       | the first  |
|                                                                                                                              |                                                                                                                                     | Cell structure and types                                               | Knowing the parts and function of each part of the cell                                    | 6       | the second |
|                                                                                                                              |                                                                                                                                     | Tissue classification                                                  | Knowing the types of tissues according to location                                         | 6       | the third  |
|                                                                                                                              |                                                                                                                                     | Epithelial tissue                                                      | Understanding tissue structure and function                                                | 6       | Fourth     |
|                                                                                                                              |                                                                                                                                     | connective tissue                                                      | Understanding tissue structure and function                                                | 6       | Fifth      |
|                                                                                                                              |                                                                                                                                     | glandular tissue                                                       | Understanding tissue structure and function                                                | 6       | Sixth      |
|                                                                                                                              |                                                                                                                                     | blood                                                                  | Understanding tissue structure and function                                                | 6       | Seventh    |
|                                                                                                                              |                                                                                                                                     | blood cell formation                                                   | Knowing the stages of blood formation                                                      | 6       | The eighth |
|                                                                                                                              |                                                                                                                                     | cartilage                                                              | Structure and function of cartilage                                                        | 6       | Ninth      |
|                                                                                                                              |                                                                                                                                     | bone marrow                                                            | Bone structure and function                                                                | 6       | tenth      |
|                                                                                                                              |                                                                                                                                     | bone                                                                   | Stages of bone                                                                             | 6       | eleventh   |



|  |  |                                     |                                                             |   |            |
|--|--|-------------------------------------|-------------------------------------------------------------|---|------------|
|  |  | formation                           | formation                                                   |   |            |
|  |  | muscle tissue                       | Types of muscles and their importance according to location | 6 | twelfth    |
|  |  | nervous tissue                      | Tissue structure and function                               | 6 | thirteenth |
|  |  | Neuron and its classifications      | nerve cell structure                                        | 6 | fourteenth |
|  |  | Support cells of the nervous system | Types of cells and their importance                         | 6 | fifteenth  |



**Second semester \ Atu\_chmML224**

| Evaluation method | Learning method | Name of unit or topic     | Required learning outcomes                        | watches | week       |
|-------------------|-----------------|---------------------------|---------------------------------------------------|---------|------------|
|                   |                 | circulatory system        | Understanding the mechanism of work and function  | 6       | the first  |
|                   |                 | lymphatic system          | Knowing the parts and functions of the device     | 6       | the second |
|                   |                 | respiratory system        | Parts of the device and the function of each part | 6       | the third  |
|                   |                 | Digestive System Part 1   | Structure and function                            | 6       | Fourth     |
|                   |                 | Digestive System Part Two | Structure and function                            | 6       | Fifth      |
|                   |                 | Digestive System Part 3   | Structure and function                            | 6       | Sixth      |
|                   |                 | Excretory system          | Structure of the excretory system and tissue type | 6       | Seventh    |
|                   |                 | Excretory system          | Structure of the excretory system and tissue type | 6       | The eighth |
|                   |                 | male reproductive system  | Device assembly and function of each part         | 6       | Ninth      |



|  |  |                            |                                                                               |   |            |
|--|--|----------------------------|-------------------------------------------------------------------------------|---|------------|
|  |  | female reproductive system | Structure of the reproductive system and the function of each part            | 6 | tenth      |
|  |  | sensory organs             | Understanding the sensory organs and their functions                          | 6 | eleventh   |
|  |  | endocrine glands           | Knowing the types of glands and their functions                               | 6 | twelfth    |
|  |  | endocrine glands           | Knowing the types of glands and their functions                               | 6 | thirteenth |
|  |  | cutaneous system           | Knowing the layers of the skin system                                         | 6 | fourteenth |
|  |  | skin                       | Understanding the structure of the skin and knowing the functions of the skin | 6 | fifteenth  |

#### 11. Course Evaluation

The semester grade (100) is distributed as follows:following:

(Practical 15 / Theoretical 25 = 40 effort) (Final Practical 25 / Final Theoretical 35 = 60 final grade)

#### 12. Learning and teaching resources

|                                                                                     |                                                                               |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Atlas of histology 5 edition victor. P Eroschenko                                   | Required textbooks(methodologythatI found it                                  |
| Histology AText and Atlas (John Koira)                                              | Main references(Sources)                                                      |
| Human histology(Jenkins)<br>Journal of histochemistry and cytochemistryThe magazine | Recommended supporting books and references (scientific journals, reports...) |
| National Institute of Health                                                        | the reviewerelectronic,websites                                               |



- Identify the skills and knowledge the student needs
- Determine the educational objective
- Educational content design
- Developing teaching methods
- Developing evaluation methods
- Implement and evaluate an educational plan

#### **Curriculum Development Plan**

## Course Description Form

1. Course Name: Molecular Biology

2. Course Code: Atu\_chmML215

3. Semester / Year: 1<sup>st</sup> semester /2024 -2025

4. Description Preparation Date: 12/11/2024

5. Available Attendance Forms: Morning/evening

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

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

Name: Dr. Aqeel AbdulAdheem jawad

Email: [aqeel.jawad@atu.edu.iq](mailto:aqeel.jawad@atu.edu.iq)

8. Course Objectives

Course Objectives

- A knowledge:
- A1 The student will learn about the composition and function of genetic material.
- A2 The student will learn about the principles foundations of genetic expression.
- A3 The student will learn about the basic foundations for the growth and reproduction of every living organism.
- B- Skills:
- B1 Isolating the genetic material DNA from primitive organisms.
- B2 Isolating the genetic material DNA from eukaryotic organisms.
- B3 Performing electrophoresis of molecules (DNA and protein).
- C Ethics:
- C 1: Trying to differentiate between scientific studies and social factors



- C 2: Respecting religious traditions and social norms in biological studies
- C3: Working as a team

## 9. Teaching and Learning Strategies

Strategy

Lectures and practical lessons - outcome-based learning - learning project-based learning - group work-based learning - problem-based learning - community-based learning - self-learning.

## 10. Course Structure

| Week | Hours    | Required Learning Outcomes                                                   | Unit or subject name                                                                                                                                                                                         | Learning method                                                | Evaluation method                            |
|------|----------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| 1    | 2T + 4 P | The student will learn about the structure and function of genetic material. | Introduction to Molecular Biology applications in Medical Laboratory Techniques specialization                                                                                                               | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 2 -4 | 2T + 4 P | The student learns the principles and foundations of gene expression.        | Structure of Deoxyribonucleic acid (DNA)<br><br>1- Primary structure<br>2- Secondary structure<br><br>1- Tertiary structure and chromosome packing in human cells<br><br>Structure of Ribonucleic acid (RNA) | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 5    | 2T + 4 P | The student will learn the principles and foundations of gene expression.    | DNA replication and replication Models                                                                                                                                                                       | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 6    | 2T + 4 P | The student will learn the principles and foundations of gene expression.    | DNA Transcription and post transcriptional modification processes.                                                                                                                                           | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 7    | 2T + 4 P | The student will learn the principles and foundations of gene expression.    | Translation and post translational modifications and protein synthesis                                                                                                                                       | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |



|       |          |                                                                      |                                                                                                                                    |                                                                  |                                              |
|-------|----------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|
| 8     | 2T + 4 P | To identify types of mutations and DNA repair mechanisms.            | DNA damage, types and repair systems and mechanisms                                                                                | - Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 9     | 2T + 4 P | Study the effect of mutations on chromosome changes                  | DNA mutations, chromosomal aberrations and causes of gene mutations                                                                | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 12-10 | 2T + 4 P | To learn about programmed cell death and its relationship to cancer. | Programmed cell death, telomere and telomerase association with carcinogenesis                                                     | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 13    | 2T + 4P  | To learn about programmed cell death and its relationship to cancer. | Programmed cell death, telomere and telomerase association with carcinogenesis                                                     | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 14-15 | 2T + 4 P | Learn about DNA synthesis technology and its various applications.   | Introduction to Recombinant DNA technology<br>1- Restriction enzymes<br>2- Cloning vectors<br>3- Applications in Molecular cloning | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |

### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

### 12. Learning and Teaching Resources

|                                                                    |                                                                                                                                                                                                      |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | 1-Molecular Biology of the Cell, 4th edition, Alberts B, Johnson A, Lewis J, et al. New York: Garland Science; 2002.<br>2- Practical Handbook Of Biochemistry / Molecular Biology/ Gerald D Fasman   |
| Main references (sources)                                          | Molecular Biology Techniques: A Classroom Laboratory Manual                                                                                                                                          |
| Recommended books and references (scientific journals, reports...) | 1- NCBI<br>2- PubMed<br>You tube                                                                                                                                                                     |
| Electronic References, Websites                                    | 1-Molecular Biology of the Cell, 4th edition, Alberts B, Johnson A, Lewis J, et al. New York: Garland Science; 2002.<br>2- Practical Handbook Of Biochemistry And Molecular Biology/ Gerald D Fasman |



## Course Description Form

|                                                                                                                          |                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name: Medical Parasitology                                                                                     |                                                                                                                                                                                                                                                |
| 2. Course Code:<br>Atu_chmML216                                                                                          |                                                                                                                                                                                                                                                |
| 3. Semester: 2024/2025 semester                                                                                          |                                                                                                                                                                                                                                                |
| 4. Description Preparation Date: 17 /8/2025                                                                              |                                                                                                                                                                                                                                                |
| 5. Available Attendance Forms: in-person lectures + practical laboratory work.                                           |                                                                                                                                                                                                                                                |
| 6. Number of Credit Hours (Total) / Number of Units (Total): (Theoretical 2 + Practical 4) /                             |                                                                                                                                                                                                                                                |
| 7. Course administrator's name (mention all, if more than one name) :<br><br>Safa khalid aziz<br>safaalaboudi6@gmail.com |                                                                                                                                                                                                                                                |
| 8. Course Objectives                                                                                                     |                                                                                                                                                                                                                                                |
| Course Objectives                                                                                                        | <b>First: Cognitive Objectives</b><br>1- Knowledge of the basic principles of stool sample examination.<br>2- Familiarity with the microscopic stains used to stain parasites.<br>3- Identify medical parasites and the most important species |



that are pathogenic to humans.

### Secondly: Skill-based Objectives

- 1- Performing direct stool examination and preparing samples using the direct staining method.
- 2- Microscopically distinguishing between the different stages of parasites (eggs, cysts, and active stages).

### 9. Teaching and Learning Strategies

|                 |                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategy</b> | Interactive lecture supported by presentations <ul style="list-style-type: none"> <li>• Class discussions and quizzes</li> <li>• Practical laboratory exercises</li> </ul> |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 10. Course Structure

| No.        | Hours | Required Learning Outcomes                             | Unit or subject name         | Learning method                          | Evaluation method |
|------------|-------|--------------------------------------------------------|------------------------------|------------------------------------------|-------------------|
| First week |       | Identify parasites, their types, and the parasite-host | Introduction to Parasitology | • Method of interrogation and discussion | • Short questions |



|                    |  |                                                                                                         |                                                                                               |                                                              |                             |
|--------------------|--|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------|
|                    |  | relationship                                                                                            |                                                                                               |                                                              |                             |
| <b>Second week</b> |  | Identify the tools and solutions used in stool examinations and the methods used for stool examinations | <ul style="list-style-type: none"> <li>• <b>Direct stool examination explained</b></li> </ul> | Lecture + practical demonstration of tools                   | Share + short report        |
| <b>Third week</b>  |  | Practical application of direct examination and how to write the report                                 | <ul style="list-style-type: none"> <li>• <b>Stoole examination</b></li> </ul>                 | My laboratory (slide preparation + microscopic observation)  | Sample preparation skill    |
| <b>Fourth week</b> |  | Protozoa Division: Entamoeba histolytica & Slide demonstration                                          | <b>Entamoeba histolytica study</b>                                                            | Theoretical explanation & slideshow to enhance understanding | Short test                  |
| <b>Fifth weeks</b> |  | Recognizing Entamoeba coli &                                                                            | <b>Study of Entamoeba coli &amp; Entamoeba Gingivalis &amp; Slide</b>                         | PowerPoint presentation, slide show to                       | Short test about amoeba and |



|                 |  |                                                                                   |                                          |                                                                                                                                              |                                                                                      |
|-----------------|--|-----------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                 |  | Entamoeba<br>Gingivalis &<br>Slide<br>demonstratio<br>n                           |                                          | enhance<br>understanding<br>, and group<br>discussion to<br>enhance<br>understanding                                                         | comparison<br>between<br>species                                                     |
| Sixth week      |  | Identifying<br>Giardia<br>lamblia & Slide<br>demonstratio<br>n                    | <b>Study of the<br/>Giardia parasite</b> | PowerPoint<br>presentation<br>and slideshow<br>to enhance<br>understanding<br>and discussion.<br>Collectively to<br>enhance<br>understanding | Give<br>homework                                                                     |
| seventh<br>week |  | Identifying the<br>genus<br>Trichomonas<br>and the<br>species of<br>Trichomonas   | <b>Trichomonas<br/>study</b>             | PowerPoint<br>presentation                                                                                                                   | Short class<br>test                                                                  |
| Ninth week      |  | Identify the<br>morphological<br>characteristics<br>of<br>Trichomonas<br>species. | <b>Trichomonas study</b>                 | Examination of<br>prepared<br>samples under<br>a microscope<br>for<br>Trichomonas<br>species                                                 | Short test on<br>Trichomonas<br>species and<br>differentiation<br>between<br>species |



|                        |  |                                                                                           |                                                  |                                                                                                                                        |                                                                                                 |
|------------------------|--|-------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Tenth week</b>      |  | Understand the importance of staining and be able to prepare and stain slides accurately. | <b>Method of staining microscopic samples</b>    | A brief theoretical explanation of dyeing methods and their importance, and a presentation of practical dyeing steps for students.     | Practical assessment:<br>The student's ability to prepare a correctly stained microscope slide. |
| <b>Eleventh weeks</b>  |  | Mide exam                                                                                 |                                                  |                                                                                                                                        |                                                                                                 |
| <b>Twelfth week</b>    |  | Identify the morphological characteristics of the genus Leishmania and its species.       | Study of the genus Leishmania                    | A brief theoretical explanation of staining methods and their importance, and a presentation of practical staining steps for students. | Short exam about leishmaniasis and its types                                                    |
| <b>thirteenth week</b> |  | Identify the morphological characteristics of the genus Trypanosoma.                      | Study of the genus Trypanosoma and its species   | A brief theoretical explanation of the genus Trypanosoma and its species                                                               |                                                                                                 |
| <b>Fourteenth Week</b> |  | Slideshow of Trichomonas & Trypanosoma                                                    | Slide demonstration of Trichomonas & Trypanosoma | Show slides to observe the morphological characteristics                                                                               | Short test on the morphological characteristics                                                 |



|                       |  | species                                            | species                               | of each species and link them to theoretical observations.            | and kinetic phase of each species |
|-----------------------|--|----------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------|-----------------------------------|
| <b>Fifteenth Week</b> |  | Learn about Balantodium coli & Slide demonstration | <b>Study of the genus Balantodium</b> | A brief theoretical explanation of the genus Balantodium & slide show | Homework + Short Quiz             |



## 11. Course Evaluation

The grade of the semester (100) is distributed as follows

:) 25 theoretical exams, 10 practical exams (5 evaluations) Final exam 35 theoretical exams - 25 practical exams

## 12 Learning and Teaching Resources

### Required textbooks (methodology, if any)

|                                                                    |                                                                                                                             |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Key references (sources)                                           | 1- Paniker – medical al parasitology<br>2- mahmud – medical parasitology<br>3-Atlas medical parasitology                    |
| Recommended books and references (scientific journals, reports...) |                                                                                                                             |
| Electronic references, websites                                    |                                                                                                                             |
| Course Development Plan                                            | <ul style="list-style-type: none"> <li>• Updating scientific content:</li> <li>• Practical and applied training:</li> </ul> |





## Course description

|                                                                                 |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------|---------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Name The Course                                                              |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| Baath regime crimes in Iraq                                                     |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 2. Course code                                                                  |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| Atu_chmML217                                                                    |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 3. the chapter / year                                                           |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| First course                                                                    |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 4. History numbers this Description                                             |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 9-8-2025                                                                        |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 5. Forms the audience Available                                                 |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| My presence                                                                     |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 6. number watches Academic (Total) number Units (Total)                         |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 2 /2                                                                            |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 7. name responsible The decision Academic ) if More than one name is mentioned( |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| the name: Dr. Jamal Abdul Amir                                                  |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| 8. Course objectives                                                            |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
|                                                                                 |                                       |                         |                                                                                                            |         | The student should be familiar with the basic concepts of the scientific subject, its theoretical foundations and scientific methods to increase its effectiveness and efficiency.                                                                                                                  |
| 9. Teaching and learning strategies                                             |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
|                                                                                 |                                       |                         |                                                                                                            |         | <ul style="list-style-type: none"> <li>- Discussion The organization The reactant</li> <li>- The statement Scientific</li> <li>- learning Cooperative</li> <li>- Problem solving</li> <li>- simulation</li> <li>- brainstorming</li> <li>- role-playing</li> <li>- Workshops Cooperative</li> </ul> |
| 10. Course structure                                                            |                                       |                         |                                                                                                            |         |                                                                                                                                                                                                                                                                                                     |
| road Evaluation                                                                 | road learning                         | name Unity or the topic | Required learning outcomes                                                                                 | watches | week                                                                                                                                                                                                                                                                                                |
| Tests Oral and tests Editorial                                                  | Giving a lecture and asking questions | Sections crimes         | thatThe student is familiar with the crimes of the Baath regime.<br>How to face challenges<br>Contemporary | 1       | 3-1                                                                                                                                                                                                                                                                                                 |



|                                |                                       |                                                                                                          |                                                                                                         |   |         |
|--------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---|---------|
| Tests Oral and tests Editorial | Giving a lecture and asking questions | crimesThe Baath regime according to the documentation of the Iraqi Supreme Criminal Court Law of 2005 AD | thatThe student is familiar with the crimes of the Baath regime.<br>How? Facing Challenges Contemporary | 1 | 6-4     |
| Tests Oral and tests Editorial | Giving a lecture and asking questions | Types crimes International                                                                               | thatThe student is familiar with the crimes of the Baath regime.<br>How to face challenges Contemporary | 1 | 9-7     |
| Tests Oral and tests Editorial | Giving a lecture and asking questions | Decisions Issued from The court Criminal Supreme                                                         | thatThe student is familiar with the crimes of the Baath regime.<br>How to face challenges Contemporary | 1 | 12 - 10 |

## 11. Course Evaluation

distribution degree from 100 on according to Tasks The person in charge With it The student like Preparation Daily and exams Daily and oral Monthly and editorialand reports...etc  
10 presence And absence, 10 Activities Safiya , 30 exam monthly, 70 exam ultimate

## 12. Learning and teaching resources

|                                                                                                                                                                                                                                                                                                                                                                                                |                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                | Required textbooks (methodology if available)<br>(المراجع الرئيسية (المصادر) |
| <ul style="list-style-type: none"> <li>D. Hussein Aliwi, D. Abbas gifi Al-Qurashi, crimes Environmental inThe era of the Ba'ath regime, publisher: The Center Iraqi To document Crimes of Extremism, Printing PressDar Al Kafeel - Karbala 2023, p. 24</li> <li>The material Eighth from "system Rome" Treaty The institution to the Criminal CourtInternational adopted in June 19</li> </ul> | Recommended supporting books and references                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                | Electronic references and websites                                           |



## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>1. Course name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| Computer applications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <b>2. Course code /Atu_chmML218</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |
| <b>3. semester/year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| 2025/ 2026(quarterly)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <b>4. Date this description was prepared</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| 18/8/2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| <b>5. Available attendance formsInside the college</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| <b>6. Number of study hours (total) / Number of units (total)Y</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| 1 Theoretical / 2 Practical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| <b>7. Name of the course administrator (if more than one name is mentioned)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| Name: M. Ahmed Taklif Tali Al-Hassani                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| Email: <a href="mailto:Ahmed.Alhasani@atu.edu.iq">Ahmed.Alhasani@atu.edu.iq</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| <b>8. Course objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| <ul style="list-style-type: none"> <li>• Cognitive objectives</li> <li>1- Gain a comprehensive understanding of the computer science laboratory environment: This includes hardware components, operating systems, basic software, and virtual environments used in the laboratory.</li> <li>2- Introducing students to the most important and latest developments in information technology, and integrating this into practical training in the computer lab, to achieve a balance between theory and practice.</li> <li>3- Program skill objectives</li> <li>1 Enable the student to useComputer andUse the Internet effectively and ethically, making use of it in academic and research contexts, including the proper use of websites and services.</li> <li>2-Developing practical skills in the computer lab, including applying theoretic knowledge to practical situations, such as preparing files, analyzing data, and preparing documents using office suite programs.</li> </ul> | <b>Course objectives</b> |
| <b>9. Teaching and learning strategies</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |
| <ul style="list-style-type: none"> <li>• This strategy aims to motivate students to learn to use computers in a practical way, with a focus on applications.Microsoft Office (Word, Excel, PowerPoint) as it is important in developing their academic and professional skills.</li> <li>• Students are trained on how to use computers, the internet, and various websites correctly and safely, with an emphasis on protectin</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Strategy</b>          |



personal privacy and maintaining good ethics when interacting with the digital world.

- Brainstorming teaching strategy.
- Teaching strategy through exchange of views and discussion Through discussion sessions.
- Information presentation teaching strategy.

Evaluation methods

- Daily, oral and written exams
- Reports
- Discussions.

## 10-Course structure

| Evaluation method           | Learning method                                                       | Name of unit or topic   | Types of computers, their sizes and uses                                                                         | watches | week       |
|-----------------------------|-----------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------|---------|------------|
| discussions                 | Lecture delivered in person and presented on Data Show                | Calculator applications | Introduction to Microsoft Excel Basics of the Spreadsheet Program (How to Create Tables and Worksheets in Excel) | 2       | the first  |
| discussions + Ask questions | Lecture delivered in person and presented on Data Show + Computer Lab | Calculator applications | Learn the commands to insert, delete, rename, and hide all (cells + columns + rows + worksheets) in Excel.       | 2       | the second |
| discussions + Ask questions | Lecture delivered in person and presented on Data Show + Computer Lab | Calculator applications | Learn how to hide rows, columns, and cells + learn how to filter and sort in Excel                               | 2       | the third  |
| discussions + Ask questions | Lecture delivered in person and presented on Data Show + Computer Lab | Calculator applications | Mathematical formulas and arithmetic operators                                                                   | 2       | Fourth     |
| discussions + Ask questions | Lecture delivered in person and presented on Data Show + Computer Lab | Calculator applications | Explain how to prepare charts in an Excel table                                                                  |         | Fifth      |
| discussions + Ask questions | Lecture delivered in person and presented on Data                     | Calculator applications | Saving, opening, and working with multiple worksheet formats: To                                                 | 2       | Sixth      |



|                             |                                                                      |                         |                                                                                                         |   |            |
|-----------------------------|----------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------|---|------------|
|                             | Show + Computer Lab                                                  |                         | enhance data storage and sharing skills.                                                                |   |            |
| discussions + Ask questions | monthly exam                                                         | monthly exam            | Exam (monthly)                                                                                          | 2 | Seventh    |
| discussions + Ask questions | Lecture delivered in person and presented onData Show + Computer Lab | Calculator applications | Introduction to Microsoft PowerPoint 2010<br>Run the program interface<br>Microsoft PowerPoint file tab | 2 | The eighth |
| discussions + Ask questions | Lecture delivered in person and presented onData Show + Computer Lab | Calculator applications | PowerPoint 2010 Home Tab Home Design tabDesign Tab                                                      | 2 | Ninth      |
| Daily exam (2)              | Daily exam (2)                                                       | Calculator applications | Insert objects and add animations in PowerPoint 2010                                                    | 2 | tenth      |
| discussions + Ask questions | monthly exam                                                         | monthly exam            | Exam (monthly)                                                                                          | 2 | eleventh   |
| discussions + Ask questions | Lecture delivered in person and presented onData Show + Computer Lab | Calculator applications | multimedia drawer set<br>Adding animations to slides and objects in PowerPoint                          | 2 | twelfth    |
| discussions + Ask questions | Lecture delivered in person and presented onData Show + Computer Lab | Calculator applications | Learn programs to convert multiple extensions to a filepdf<br>Link PowerPoint to Windows programs       | 2 | thirteenth |
| discussions + Ask questions | monthly exam                                                         | monthly exam            | Exam (monthly)                                                                                          | 2 | fourteenth |

### The test Achievement

fifteenth

### 11. Course Evaluation

The semester grade (100) is distributed as follows:following:

The degree of endeavor is 40, with 25 theoretical and 15 practical points.

Final exam score: 60, 35 theoretical and 25 practical

### 12. Learning and teaching resources

|                                                        |                                              |
|--------------------------------------------------------|----------------------------------------------|
|                                                        | Required textbooks(methodologythatI found it |
| - The curriculum book issued by the Ministry of Higher | Main references(Sources)                     |



|                                                                                                                                                                                                                                     |                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Education and Scientific Research - Part One.<br>The curriculum book issued by the Ministry of Higher<br>Education and Scientific Research - Part Two.<br>- Microsoft Worldwide Suite 2010                                          |                                                                                  |
|                                                                                                                                                                                                                                     | Recommended supporting books and references<br>(scientific journals, reports...) |
| Operating system Windows 7, Microsoft.<br>Electronic references: Microsoft's official website:<br><a href="http://www.microsoft.com">www.microsoft.com</a><br>Microsoft Word-PowerPoint 2010 – Mohammed slave gift<br>The lamp 2010 | the reviewer electronic, websites                                                |
| <ul style="list-style-type: none"><li>•</li><li>•</li></ul>                                                                                                                                                                         | Curriculum Development Plan                                                      |



## Course description form

| <b>1. Course Name</b>                                                                                                                                  |                        |                                                                   |                            |                                |                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------|----------------------------|--------------------------------|---------------------------|
| Descriptive Biostatistics                                                                                                                              |                        |                                                                   |                            |                                |                           |
| <b>2. Course Code</b>                                                                                                                                  |                        |                                                                   |                            |                                |                           |
| Atu_chmML226                                                                                                                                           |                        |                                                                   |                            |                                |                           |
| <b>3. Semester/year</b>                                                                                                                                |                        |                                                                   |                            |                                |                           |
| the second /2024                                                                                                                                       |                        |                                                                   |                            |                                |                           |
| <b>4. Date this description was prepared</b>                                                                                                           |                        |                                                                   |                            |                                |                           |
| 2/29/2024                                                                                                                                              |                        |                                                                   |                            |                                |                           |
| <b>5. Available attendance forms</b>                                                                                                                   |                        |                                                                   |                            |                                |                           |
| My presence                                                                                                                                            |                        |                                                                   |                            |                                |                           |
| <b>6. Number of study hours (total)/number of units (total)</b>                                                                                        |                        |                                                                   |                            |                                |                           |
| 120 hours – 3 credits                                                                                                                                  |                        |                                                                   |                            |                                |                           |
| <b>7. Name of the course administrator (if more than one name is mentioned)</b>                                                                        |                        |                                                                   |                            |                                |                           |
| Name: Dr. Ghassan Dhaher email:                                                                                                                        |                        |                                                                   |                            |                                |                           |
| <b>8. Course objectives</b>                                                                                                                            |                        |                                                                   |                            |                                |                           |
| The student must be able to understand the basics of statistics, as well as ability to analyze data and know the effect rates of the study in question |                        |                                                                   |                            |                                | Objectives of the subject |
| <b>9. Teaching and learning strategies</b>                                                                                                             |                        |                                                                   |                            |                                |                           |
| Various explanations of the phenomenon and experiments to analyze data, well as the use of statistical programs to demonstrate this                    |                        |                                                                   |                            |                                | The strategy              |
| <b>10. Course structure</b>                                                                                                                            |                        |                                                                   |                            |                                |                           |
| Evaluation method                                                                                                                                      | Learning method        | Name of the unit or topic                                         | Required learning outcomes | hours                          | the week                  |
| +Quiz<br>Attendance                                                                                                                                    | Understand the lecture | Introduction. Measurement scale of variables. Statistical tables. | Understand the lecture     | 2- Theoretical<br>4- Practical | 1                         |
| +Quiz<br>Attendance                                                                                                                                    | Understand the lecture | Graphical presentation.                                           | Understand the lecture     | 2- Theoretical<br>4- Practical | 2                         |
| +Quiz<br>Attendance                                                                                                                                    | Understand the lecture | Arithmetical presentation.                                        | Understand the lecture     | 2- Theoretical<br>4- Practical | 3                         |
| +Quiz<br>Attendance                                                                                                                                    | Understand the lecture | a-Central trend measurements. (Mean-Arithmetic mean).             | Understand the lecture     | 2- Theoretical<br>4-           | 4                         |



|                     |                        |                                                                                                                                                               |                        |                                             |    |
|---------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------|----|
| +Quiz<br>Attendance | Understand the lecture | b- Dispersion Measurements. Quartiles. Deciles. Percentiler. Mean Deviation. Standard Deviation. Variance.                                                    | Understand the lecture | Practical<br>2- Theoretical<br>4- Practical | 5  |
| +Quiz<br>Attendance | Understand the lecture | Range. Root mean square. Interquartile range. Quartile Deviation. Coefficient of variation. Coefficient of Quartile. Standardized variable (Standard scores). | Understand the lecture | 2- Theoretical<br>4- Practical              | 6  |
| +Quiz<br>Attendance | Understand the lecture | c-Coefficient of skewness. Coefficient of Momental skewness. Preson's first coefficient of skewness. Quartile coefficient of skewness.                        | Understand the lecture | 2- Theoretical<br>4- Practical              | 7  |
| +Quiz<br>Attendance | Understand the lecture | d- Coefficient of kurtosis. Coefficient of momental kurtosis.                                                                                                 | Understand the lecture | 2- Theoretical<br>4- Practical              | 8  |
| +Quiz<br>Attendance | Understand the lecture | Probability. Introduction. Definitions-Definition of Probability. Probability theorems.                                                                       | Understand the lecture | 2- Theoretical<br>4- Practical              | 9  |
| +Quiz<br>Attendance | Understand the lecture | - Conditional Prob. Mutually exclusive. Independence. Ranges theorem.                                                                                         | Understand the lecture | 2- Theoretical<br>4- Practical              | 10 |
| +Quiz<br>Attendance | Understand the lecture | Sampling Distribution.                                                                                                                                        | Understand the lecture | 2- Theoretical<br>4- Practical              | 11 |
| +Quiz<br>Attendance | Understand the lecture | Estimation. Summary of confidence interval.                                                                                                                   | Understand the lecture | 2- Theoretical<br>4- Practical              | 12 |

|                                                                                   |                     |                        |                                                                                                                                                                                                     |                        |                                     |    |
|-----------------------------------------------------------------------------------|---------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------|----|
|  | +Quiz<br>Attendance | Understand the lecture | Summary of significant tests.                                                                                                                                                                       | Understand the lecture | 1<br>2- Theoretical<br>4- Practical | 13 |
|                                                                                   | +Quiz<br>Attendance | Understand the lecture | Testing for the value of a specified parameter(s).                                                                                                                                                  | Understand the lecture | 2- Theoretical<br>4- Practical      | 14 |
|                                                                                   | +Quiz<br>Attendance | Understand the lecture | Analysis of variance One way classification<br>Two-way classification with one observation per cell.<br>Two – way classification with (r). observation per cell.<br>Multiple comparisons (A-ANOVA). | Understand the lecture | 2- Theoretical<br>4- Practical      | 15 |

#### 11. Course evaluation

Attendance, participation, peer evaluation, weekly reports

#### 12. Learning and teaching resources

|                                                                                                                                                                                                                                    |                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Dr.. Khashi Mahmoud Al-Rawi, Introduction to Statist<br>Mosul University Press1989<br>Dr. Mahmoud Hassan Al-Mashhadani, Amir Hanna Horm<br>Statistics, Dar Al-Kutub Directorate for Printing a<br>Publishing, Baghdad Printing1989 | Required textbooks (methodology, if any)                                       |
| Dr.. Khashi Mahmoud Al-Rawi, Introduction to Statist<br>Mosul University Press1989                                                                                                                                                 | Main references (sources)                                                      |
| Scientific journals                                                                                                                                                                                                                | Recommended supporting books and references (scientific journals, reports....) |
| Electronic reference for information                                                                                                                                                                                               | Electronic references, Internet sites                                          |



## Course description

|                                                                 |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Name The decision</b>                                     |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| Arabic                                                          |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>2. Course code</b>                                           |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| Atu_chmML227                                                    |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>3. Chapter / year</b>                                        |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| Second course (second semester)                                 |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>4. History numbers this Description</b>                      |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| 8-3-2025                                                        |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>5. Forms the audience Available</b>                          |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| My presence                                                     |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>6. number watches Academic (Total) number Units (Total)</b>  |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| 2/2                                                             |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>7. nameCourse Leader) ifMore than one name is mentioned(</b> |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| the name: M.Dr. Bushra Hashim Ahmed                             |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| <b>8. Course objectives</b>                                     |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
|                                                                 |                                       |                                     |                                             |         | Teaching students how to read classical Arabic                                                                                                                                                                                                 |
| <b>9. Teaching and learning strategies</b>                      |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
|                                                                 |                                       |                                     |                                             |         | <ul style="list-style-type: none"> <li>- Discussioninteractive organization-StatementScientific</li> <li>- learningCooperative-Solutionproblems-simulation</li> <li>- brainstorming - role-playing</li> <li>- Workshops Cooperative</li> </ul> |
| <b>10. Course structure</b>                                     |                                       |                                     |                                             |         |                                                                                                                                                                                                                                                |
| road Evaluation                                                 | road learning                         | name Unity or the topic             | Required learning outcomes                  | watches | week                                                                                                                                                                                                                                           |
| TestsOral and written tests                                     | Giving a lecture and asking questions | Sections speech                     | thatThe student learns the parts of speech. | 2       | 2 - 1                                                                                                                                                                                                                                          |
| TestsOral and written tests                                     | Giving a lecture and asking questions | the name And its signs              | To recognizeStudent name and marks          | 2       | 4 - 3                                                                                                                                                                                                                                          |
| TestsOral and written tests                                     | Giving a lecture and                  | verb And its sections And its signs | thatThe student learns about the verb, its  | 2       | 6 - 5                                                                                                                                                                                                                                          |



|                              |                                       |                              |                                                                       |   |         |
|------------------------------|---------------------------------------|------------------------------|-----------------------------------------------------------------------|---|---------|
|                              | asking questions                      |                              | types and signs:                                                      |   |         |
| Tests Oral and written tests | Giving a lecture and asking questions | Syntax and construction      | that The student learns about syntax and construction.                | 2 | 8 - 7   |
| Tests Oral and written tests | Giving a lecture and asking questions | Cases Arabic And its signs   | that The student learns about the grammatical cases and their signs.  | 2 | 10 - 9  |
| Tests Oral and written tests | Giving a lecture and asking questions | Names The built              | The student should learn about the built-in nouns.                    | 2 | 12 - 11 |
| Tests Oral and written tests | Giving a lecture and asking questions | Cases building verb the past | The student should be familiar with the construction cases.past tense | 2 | 14 - 13 |

### 11. Course Evaluation

distribution degree from 100 on according to Tasks The person in charge With it The student like Preparation Daily and exams Daily and oral Monthly and editorial and reports...etc  
10 presence And absence, 10 Activities Safiya, 10 exam monthly, 70 exam ultimate

### 12. Learning and teaching resources

|                                                                                                                                             | Required textbooks (methodology if available)       |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Grammar The obvious<br>to explain son Aqil on Alfiyya son What is with you<br>The masterpiece year in to explain the introduction Ajroumiya | – Main references (sources)<br>–<br>–               |
|                                                                                                                                             | Recommended supporting books and references, if any |
|                                                                                                                                             | Electronic references and websites                  |

# **Third Stage**



## Course Description Template

|                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- Course Name: <b>HISTOPATHOLOGY</b>                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 2- Course Code \ Atu chmML311 + Atu chmML321                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Semester / Year: 2024 / 2025 (Semester)                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4- Date of Preparing this Description: 18/8/2025                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5- Available Modes of Attendance: <b>Classroom + Lab</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 6- Total Study Hours / Total Units: 6. Number of study hours (4 hours), number of units (3 units) |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 7- Course Coordinator(s)                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Name : Abbas Hussein Obaid                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Email: abbas.obaid@atu.edu.iq                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 8- Course Objectives                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| General Objectives of the Course:                                                                 | <b>Cognitive Objectives:</b><br>-1- Giving the student a broad and modern idea about pathology.<br><b>Program-Specific Skill Objectives:</b><br>- Establishing a good information base on pathology and modern techniques to enable the student to keep up with the medical community he will live with after graduation in hospitals.                                                                                                |
| 9- Teaching and Learning Strategies Strategy:                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Strategy                                                                                          | -strategic:<br><br>Lectures for delivering theoretical concepts.<br>Laboratory sessions for practical applications.<br>Group discussions to enhance critical thinking.<br>Problem-based learning to connect theory with practice.<br>Case studies for applied learning.<br>Assignments and short projects to promote independent learning.<br>Methods of Assessment:<br>Quizzes<br>Midterm exam<br>Final exam<br>Laboratory reports . |



**1st Course Structure**

**First Semester / Atu\_chmML311**

| <b>Week</b> | <b>Hours</b> | <b>Intended Learning Outcomes</b>                         | <b>Unit/Topic</b> | <b>Teaching Method</b>         | <b>Assessment Method</b> |
|-------------|--------------|-----------------------------------------------------------|-------------------|--------------------------------|--------------------------|
| 1           | 2            | <b>Introduction</b>                                       | 2                 | In classrooms and laboratories | Quizzes                  |
| 2           | 2            | <b>History of Pathology</b>                               | 2                 | In classrooms and laboratories | Quizzes                  |
| 3           | 2            | <b>Cell Injury and Cell Death</b>                         | 2                 | In classrooms and laboratories | Quizzes                  |
| 4           | 2            | <b>Inflammation</b>                                       | 2                 | In classrooms and laboratories | Quizzes                  |
| 5           | 2            | <b>Tissue Repair (Healing)</b>                            | 2                 | In classrooms and laboratories | Quizzes                  |
| 6           | 2            | <b>Haemodynamic Disorders</b>                             | 2                 | In classrooms and laboratories | Quizzes                  |
| 7           | 2            | <b>Cellular Adaptations of Growth and Differentiation</b> | 2                 | In classrooms and laboratories | Quizzes                  |
| 8           | 2            | <b>Neoplasia</b>                                          | 2                 | In classrooms and laboratories | Quizzes                  |
| 9           | 2            | <b>Diseases of Immunity</b>                               | 2                 | In classrooms and laboratories | Quizzes                  |



|    |   |                                                       |   |                                |         |
|----|---|-------------------------------------------------------|---|--------------------------------|---------|
| 10 | 2 | <b>Nutritional Diseases</b>                           | 2 | In classrooms and laboratories | Quizzes |
| 11 | 2 | <b>Physical and Chemical Injuries</b>                 | 2 | In classrooms and laboratories | Quizzes |
| 12 | 2 | <b>Concretions</b>                                    | 2 | In classrooms and laboratories | Quizzes |
| 13 | 2 | <b>Genetic Diseases</b>                               | 2 | In classrooms and laboratories | Quizzes |
| 14 | 2 | <b>Obstructive Circulatory Disturbances</b>           | 2 | In classrooms and laboratories | Quizzes |
| 15 | 2 | <b>General Pathology of Infectious Diseases Index</b> | 2 | In classrooms and laboratories | Quizzes |



Second Semester / **Atu\_chmML321**

| Week | Hours | Intended Learning Outcomes                   | Unit/Topic | Teaching Method                | Assessment Method |
|------|-------|----------------------------------------------|------------|--------------------------------|-------------------|
| 1    | 2     | Environment and life-style related pathology | 2          | In classrooms and laboratories | Quizzes           |
| 2    | 2     | Nutritional Diseases                         | 2          | In classrooms and laboratories | Quizzes           |
| 3    | 2     | Genetic Diseases                             | 2          | In classrooms and laboratories | Quizzes           |
| 4    | 2     | Clinical Aspects of Neoplasia                | 2          | In classrooms and laboratories | Quizzes           |
| 5    | 2     | Molecular Basis of Cancer                    | 2          | In classrooms and laboratories | Quizzes           |
| 6    | 2     | Diseases Caused by Viruses                   | 2          | In classrooms and laboratories | Quizzes           |
| 7    | 2     | Immunopathology Including Amyloidosis        | 2          | In classrooms and laboratories | Quizzes           |
| 8    | 2     | Genetic Diseases                             | 2          | In classrooms and laboratories | Quizzes           |
| 9    | 2     | Bone                                         | 2          | In classrooms and laboratories | Quizzes           |



|                                                                                                 |   |                                             |                                                                                                                                                                                      |                                |         |
|-------------------------------------------------------------------------------------------------|---|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------|
|                                                                                                 | 2 | Techniques for analyzing bone               | 2                                                                                                                                                                                    | In classrooms and laboratories | Quizzes |
| 11                                                                                              | 2 | Neuropathology and muscle biopsy techniques | 2                                                                                                                                                                                    | In classrooms and laboratories | Quizzes |
| 12                                                                                              | 2 | Muscle biopsies                             | 2                                                                                                                                                                                    | In classrooms and laboratories | Quizzes |
| 13                                                                                              | 2 | Molecular pathology                         | 2                                                                                                                                                                                    | In classrooms and laboratories | Quizzes |
| 14                                                                                              | 2 | Techniques in molecular pathology           | 2                                                                                                                                                                                    | In classrooms and laboratories | Quizzes |
| 15                                                                                              | 2 | Exam                                        | 2                                                                                                                                                                                    | In classrooms and laboratories | Quizzes |
| <b>11-Course Evaluation</b>                                                                     |   |                                             |                                                                                                                                                                                      |                                |         |
| The semester grade (100) is distributed as follows_: %40 effort + 35 theoretical + 25 practical |   |                                             |                                                                                                                                                                                      |                                |         |
| <b>12-Learning and Teaching Resources</b>                                                       |   |                                             |                                                                                                                                                                                      |                                |         |
| Required Textbooks (if available)                                                               |   |                                             |                                                                                                                                                                                      |                                |         |
| Main References (sources)                                                                       |   |                                             | Pathologic basis of diseases, 8 <sup>th</sup> edition, 2012<br>Junqueira's basic histology, 15 <sup>th</sup> edition, 2018<br>Pathology illustrated, 17 <sup>th</sup> edition, 2011. |                                |         |
| Recommended Supplementary References (scientific journals, reports, etc.)                       |   |                                             | Non                                                                                                                                                                                  |                                |         |



|                                         |                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                                                                                                                                                                                                                                                                                                                                                                        |
| Electronic References, Internet Sources | Non                                                                                                                                                                                                                                                                                                                                                                    |
| Curriculum Development Plan             | <ul style="list-style-type: none"><li><input type="checkbox"/> Enhance laboratory sessions with additional practical activities.</li><li><input type="checkbox"/> Encourage student presentations and mini-research projects.</li><li><input type="checkbox"/> Diversify assessment tools to include practical, theoretical, and research-based evaluations.</li></ul> |



## Course Description

|                                                                                                                           |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
|---------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Name The Course<br>Hematology 1                                                                                        |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 2. Course code<br>Atu_chmML312                                                                                            |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 3. Chapter / year<br>Stage 3                                                                                              |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 4. History numbers this Description<br>20-8-2025                                                                          |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 5. Forms the audience Available<br>My presence                                                                            |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 6. number watches Academic (Total) number Units (Total)<br>4/4                                                            |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 7. name responsible The decision Academic) if more From a name that is mentioned(<br>the name: MMr. Hussein Sattar Rabbat |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| 8. Course objectives                                                                                                      |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
|                                                                                                                           |                         |                                                                                 |                                               | <p>The student should be familiar with the basic concepts of the subject.</p> <p>Scientific, theoretical foundations and practical means</p> <p>Increase the effectiveness and efficiency of data analysis</p> <p>Laboratory according to the objectives of the Medical Laboratory Technology Department</p> |      |
| 9. Teaching and learning strategies                                                                                       |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
|                                                                                                                           |                         |                                                                                 |                                               | <ul style="list-style-type: none"> <li>- Discussion The organization The reactant</li> <li>- The statement Scientific - learning Cooperative</li> <li>- Problem solving - simulation</li> <li>- brainstorming - role-playing</li> <li>- Workshops Cooperative</li> </ul>                                     |      |
| 10. Course structure                                                                                                      |                         |                                                                                 |                                               |                                                                                                                                                                                                                                                                                                              |      |
| road Evaluation                                                                                                           | road learning           | name Unity or the topic                                                         | Required learning outcomes                    | watches                                                                                                                                                                                                                                                                                                      | week |
| Tests Theory and practical tests                                                                                          | theoretical + practical | Introduction of hematology (definition, importance, general functions of blood) | the study knowledge and practical application | 4                                                                                                                                                                                                                                                                                                            | 1    |



|                                  |                         |                                                                                               |                                               |   |        |
|----------------------------------|-------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------|---|--------|
| Tests Theory and practical tests | theoretical + practical | Hemopoiesis, erythropoiesis, morphology of RBCs, cell membrane of RBCs and metabolism of RBCs | the study knowledge and practical application | 4 | 3 - 2  |
| Tests Theory and practical tests | theoretical + practical | Hemoglobin (structure, synthesis and levels in blood and in erythrocytes)                     | the study knowledge and practical application | 4 | 4      |
| Tests Theory and practical tests | theoretical + practical | Anemia (definition, causes, classification)                                                   | the study knowledge and practical application | 4 | 5      |
| Tests Theory and practical tests | theoretical + practical | Iron metabolism, iron deficiency anemia                                                       | the study knowledge and practical application | 4 | 6      |
| Tests Theory and practical tests | theoretical + practical | Megaloblastic anemia (B12 deficiency, causes and diagnosis) and pernicious anemia             | the study knowledge and practical application | 4 | 7      |
| Tests Theory and practical tests | theoretical + practical | Folate deficiency (causes, diagnosis)                                                         | the study knowledge and practical application | 4 | 8      |
| Tests Theory and practical tests | theoretical + practical | Hemolytic anemia                                                                              | the study knowledge and practical application | 4 | 10 - 9 |
| Tests Theory and practical tests | theoretical + practical | Thalassemia (definitions, types, causes and diagnosis)                                        | the study knowledge and practical application | 4 | 11     |
| Tests Theory and practical tests | theoretical + practical | Sickle cell anemia                                                                            | the study knowledge and practical application | 4 | 12     |
| Tests Theory and practical tests | theoretical + practical | Aplastic anemia                                                                               | the study knowledge and practical application | 4 | 13     |
| Tests Theory and practical tests | theoretical + practical | Polycythemia                                                                                  | the study knowledge and practical application | 4 | 14-15  |

#### Chapter Two/ Hematology 2/Atfu\_chmML322

|                                  |                         |                                                                                                |                                               |   |     |
|----------------------------------|-------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------|---|-----|
| Tests Theory and practical tests | theoretical + practical | White blood cells (classification and general functions of each one)                           | the study knowledge and practical application | 4 | 1-2 |
| Tests Theory and practical tests | theoretical + practical | Nonmalignant WBCs diseases (neutrophilia, neutropenia, eosinophilia, eosinopenia, monocytosis) | the study knowledge and practical application | 4 | 3   |
| Tests Theory and practical tests | theoretical + practical | Lymphocytes of Disorders                                                                       | the study knowledge and practical application | 4 | 4   |



|                                  |                         |                                                                                                            |                                               |   |        |
|----------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---|--------|
| Tests Theory and practical tests | theoretical + practical | Malignant diseases of WBCs (Leukemia, definition of it, types, classification, causes, leukemoid reaction) | the study knowledge and practical application | 4 | 5      |
| Tests Theory and practical tests | theoretical + practical | Acute leukemia (acute lymphocytic leukemia, acute myeloid leukemia) causes and diagnosis of each one       | the study knowledge and practical application | 4 | 6      |
| Tests Theory and practical tests | theoretical + practical | Chronic leukemia (chronic lymphocytic leukemia, chronic myeloid leukemia) causes and diagnosis of each one | the study knowledge and practical application | 4 | 7      |
| Tests Theory and practical tests | theoretical + practical | Lymphoma (Hodgkin's lymphoma, causes, lab. Findings)                                                       | the study knowledge and practical application | 4 | 8      |
| Tests Theory and practical tests | theoretical + practical | Non-Hodgkin's Lymphoma, causes and lab. findings                                                           | the study knowledge and practical application | 4 | 9      |
| Tests Theory and practical tests | theoretical + practical | Platelets (morphology and general functions)                                                               | the study knowledge and practical application | 4 | 10     |
| Tests Theory and practical tests | theoretical + practical | Hemostasis                                                                                                 | the study knowledge and practical application | 4 | 11     |
| Tests Theory and practical tests | theoretical + practical | Bleeding disorders                                                                                         | the study knowledge and practical application | 4 | 12- 13 |
| Tests Theory and practical tests | theoretical + practical | Arterial thrombosis, venous thrombosis and risk factors                                                    | the study knowledge and practical application | 4 | 14-15  |

## 11. Course

### Evaluation

The semester grade (100) is distributed as follows: 40 annual efforts divided into (10 practical grades + 25 theoretical grades + 5 activity grades) + 60 final exam grades (25 practical exam grades + 35 theoretical exam grades)

## 12. Learning and teaching resources

|                                                                                                                                                                                                                                                                                        | Required textbooks(methodology that I found it |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Carr, J. H. (2021). Clinical Hematology Atlas-E-Book: Clinical Hematology Atlas-E-Book. Elsevier Health Sciences.<br>Hoffman, R., Benz, E. J., Silberstein, L. E., Heslop, H., Weitz, J., & Anastasi, J. (2013). Hematology: Diagnosis and Treatment E-Book. Elsevier Health Sciences. | Main references(Sources)                       |



|  |                                                                                          |
|--|------------------------------------------------------------------------------------------|
|  | <b>Recommended supporting books and references<br/>(scientific journals, reports...)</b> |
|  | <b>the reviewer electronic, websites</b>                                                 |



## Course Description

|                                                                                                |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
|------------------------------------------------------------------------------------------------|-------------------------|-------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Name- The Course<br>Microbiology                                                            |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 2. Course code<br>Atu_chmML313                                                                 |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 3. Chapter / year<br>Stage 3                                                                   |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 4. History numbers this Description<br>20-8-2025                                               |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 5. Forms the audience Available<br>My presence                                                 |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 6. number watches Academic (Total) number Units (Total)<br>4/4                                 |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 7. nameCourse Leader) if moreFrom a name that is mentioned(<br>the name: M.m. Janan Karim Issa |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| 8. Course objectives                                                                           |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
|                                                                                                |                         |                         |                                            | <p>The student should be familiar with the basic concepts of the subject.</p> <p>Scientific, theoretical foundations and practical means</p> <p>Increase the effectiveness and efficiency of data analysis</p> <p>Laboratory according to the objectives of the Medical Laboratory Technology Department</p> |      |
| 9. Teaching and learning strategies                                                            |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
|                                                                                                |                         |                         |                                            | <ul style="list-style-type: none"> <li>- Discussion The organization The reactant</li> <li>- The statement Scientific - learning Cooperative</li> <li>- Problem solving - simulation</li> <li>- brainstorming - role-playing</li> <li>- Workshops Cooperative</li> </ul>                                     |      |
| 10. Course structure                                                                           |                         |                         |                                            |                                                                                                                                                                                                                                                                                                              |      |
| road Evaluation                                                                                | road learning           | name Unity or the topic | Required learning outcomes                 | watches                                                                                                                                                                                                                                                                                                      | week |
| TestsTheory and practical tests                                                                | theoretical + practical | Adeno and Parvoviruses  | Study, knowledge and application practical | 4                                                                                                                                                                                                                                                                                                            | 1    |



|                                  |                         |                                                                                   |                                            |   |    |
|----------------------------------|-------------------------|-----------------------------------------------------------------------------------|--------------------------------------------|---|----|
| Tests Theory and practical tests | theoretical + practical | Arbovirus                                                                         | Study, knowledge and application practical | 4 | 2  |
| Tests Theory and practical tests | theoretical + practical | Oncogenic viruses                                                                 | Study, knowledge and application practical | 4 | 3  |
| Tests Theory and practical tests | theoretical + practical | Bacteriophages (Bacterial viruses)                                                | Study, knowledge and application practical | 4 | 4  |
| Tests Theory and practical tests | theoretical + practical | Antiviral Drugs & Viral vaccines                                                  | Study, knowledge and application practical | 4 | 5  |
| Tests Theory and practical tests | theoretical + practical | Introduction to medical mycology, History and Epidemiology of medicine mycology   | Study, knowledge and application practical | 4 | 6  |
| Tests Theory and practical tests | theoretical + practical | Morphology, Classification, reproduction of pathogenic fungi.                     | Study, knowledge and application practical | 4 | 7  |
| Tests Theory and practical tests | theoretical + practical | Superficial mycosis: Tinea types and Dematiaceous (black fungi).                  | Study, knowledge and application practical | 4 | 8  |
| Tests Theory and practical tests | theoretical + practical | Cutaneous mycoses: Try Trichophyton Spp, Microsporum Spp, and Epidermophyton Spp. | Study, knowledge and application practical | 4 | 9  |
| Tests Theory and practical tests | theoretical + practical | Subcutaneous mycosis: Sporothricosis and Mycetoma.                                | Study, knowledge and application practical | 4 | 10 |
| Tests Theory and practical tests | theoretical + practical | Infection due to filamentous fungi (Zygomycosis and Aspergillosis).               | Study, knowledge and application practical | 4 | 11 |
| Tests Theory and practical tests | theoretical + practical | Infection caused by yeasts (Candidiasis and Cryptococcosis).                      | Study, knowledge and application practical | 4 | 12 |
| Tests Theory and practical tests | theoretical + practical | Opportunistic mycosis; Mucor and Penicilliosis. Antibiotics produced by fungi     | Study, knowledge and application practical | 4 | 13 |



|                                  |                         |                                                                           |                                            |   |    |
|----------------------------------|-------------------------|---------------------------------------------------------------------------|--------------------------------------------|---|----|
| Tests Theory and practical tests | theoretical + practical | Systemic mycosis: Coccidiomycosis and Blastomycosis.                      | Study, knowledge and application practical | 4 | 14 |
| Tests Theory and practical tests | theoretical + practical | Histoplasmosis and Paracoccidiomycosis<br>Antifungal agents<br>Mycotoxins | Study, knowledge and application practical | 4 | 15 |

### 11. Course

#### Evaluation

The semester grade (100) is distributed as follows: 40 annual efforts divided into (10 practical grades + 25 theoretical grades + 5 activity grades) + 60 final exam grades (25 practical exam grades + 35 theoretical exam grades)

### 12. Learning and teaching resources

|                                                                                                                                    |                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|                                                                                                                                    | Required textbooks(methodologythatI found it                                  |
| Aiyer, P. V. D. (2018). Introduction to Microbiology Volume Two: Virology, Mycology & Environmental Microbiology. Idea Publishing. | Main references(Sources)                                                      |
|                                                                                                                                    | Recommended supporting books and references (scientific journals, reports...) |
|                                                                                                                                    | the reviewer electronic, websites                                             |



## Course Description Form

1. Course Name: Metabolic disorders

2. Course Code: Atu\_chmML314

3. Semester / Year: 1<sup>st</sup> semester /2024 -2025

4. Description Preparation Date: 2025-7-10

5. Available Attendance Forms: Morning

6. Number of Credit Hours (Total) 30 hours / Number of Units (Total) 4 unit

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

Name: Dr. Fahad Dakhil Fahd

Email:

### 8. Course Objectives

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Course Objectives | <ul style="list-style-type: none"> <li>• A knowledge:               <ol style="list-style-type: none"> <li>1. Introducing the student to the basic principles related to metabolic disorders in clinical chemistry and introducing them to the student.</li> <li>2. Identifying diseases related to theoretical clinical chemistry and how to diagnose them.</li> <li>3. Understanding the mechanism of disease development, their causes and methods of diagnosing them clinically.</li> </ol> </li> <li>• B- Skills:               <ol style="list-style-type: none"> <li>1. Understanding the external factors that lead to the emergence of diseases.</li> <li>2. Theoretical and practical application of laboratory diagnostic methods and training on modern available devices such as spectrophotometer, centrifuge, water bath and automated devices used in conducting medical examinations.</li> <li>3. Analyzing the results reached by students and comparing them with reference results.</li> </ol> </li> <li>C Ethics:               <ol style="list-style-type: none"> <li>1. The importance of completing laboratory tests as quickly as possible contributes to saving lives, especially tests with critical values. This contributes to avoiding legal issue and tribal claims.</li> <li>2. Spreading peace and reassurance among patients and their families</li> </ol> </li> </ul> |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 9. Teaching and Learning Strategies

|          |                                                                                                                                   |
|----------|-----------------------------------------------------------------------------------------------------------------------------------|
| Strategy | Lectures, discussions and practical lessons Product-based learning Group-based learning Community-based learning - Self-learning. |
|----------|-----------------------------------------------------------------------------------------------------------------------------------|

### 10. Course Structure

| Week | Hours    | Required Learning Outcomes                                          | Unit or subject name                         | Learning method                               | Evaluation method                            |
|------|----------|---------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------|----------------------------------------------|
| 1&2  | 2T + 4 P | The student will learn about the Water and electrolytes balance and | Water and electrolytes balance and imbalance | Lectures and practical lessons<br>-Discussion | Theory exams<br>- practical<br>- Discussions |



|         |          |                                                                                         |                                                              |                                                                  |                                              |
|---------|----------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|
|         |          | imbalance                                                                               |                                                              | Brainstorming                                                    |                                              |
| 3&4     | 2T + 4 P | The student learns the acid base balance and imbalance                                  | Acid base balance and imbalance                              | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 6&5     | 2T + 4 P | The student will learn the disorder of vitamins, trace elements and metals metabolism . | Disorder of vitamins, trace elements and metals metabolism . | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 7       | 2T + 4 P | The student will learn the renal disorder .                                             | Renal disorder .                                             | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 8       | 2T + 4 P | The student will learn the liver disorders and gallstones                               | Liver disorders and gallstones                               | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 9       | 2T + 4 P | To identify types of pancreatic disorders                                               | Pancreatic disorders                                         | - Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 10      | 2T + 4 P | study the disorders of lipid metabolism                                                 | Disorders of lipid metabolism                                | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 11      | 2T + 4 P | to learn about metabolic syndrome                                                       | Metabolic syndrome                                           | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 12      | 2T + 4P  | To learn about disorder of protein, uric acid, gout and purine metabolism               | Disorder of protein, Uric acid, gout and purine metabolism   | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 13 & 14 | 2T + 4 P | Learn about disorders haem metabolism: iron and the porphyrias                          | Disorders of haem metabolism: iron and the porphyrias        | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 15      |          | To learn about cardiovascular disorders                                                 | Cardiovascular disorders                                     | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |

#### 11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

## 12. Learning and Teaching Resources

|                                                                      |                                                                                                                                                                                                          |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks<br>(curricular books, if any)                     | 1- Molecular Biology of the Cell, 4th edition, Alberts B, Johnson A, Lewis J, et al. New York: Garland Science; 2002.<br>2- Practical Handbook Of Biochemistry And Molecular Biology/<br>Gerald D Fasman |
| Main references (sources)                                            | Molecular Biology Techniques: A Classroom Laboratory<br>Manua                                                                                                                                            |
| Recommended books and<br>references (scientific journals, reports..) | 1- NCBI<br>2- PubMed<br>You tube                                                                                                                                                                         |
| Electronic References, Websites                                      | 1- Molecular Biology of the Cell, 4th edition, Alberts B, Johnson A, Lewis J, et al. New York: Garland Science; 2002.<br>2- Practical Handbook Of Biochemistry And Molecular Biology/<br>Gerald D Fasman |



## Course Description Form

|                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name: Genetics-theory                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2. Course Code:<br>Atu_chmML315                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3. Semester: first and second semester/third stage                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4. Description Preparation Date: 2024-2025                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 5. Available Attendance Forms:<br>2-8-2025                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 6. Number of Credit Hours (Total) / Number of Units (Total) : 2/6                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 7. Course administrator's name (mention all, if more than one name)<br>Name:Najat Mohammed flyyih<br>Email: najat.fleihckm@atu.edu.iq |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 8. Course Objectives                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Course Objectives                                                                                                                     | <ol style="list-style-type: none"><li>1. Student's knowledge of human genetics</li><li>2. Understand what heredity, hereditary diseases, and inherited diseases are, gaining a distinction between them</li><li>3. Knowing the inheritance of cancerous diseases and the genes responsible for the diseases</li><li>4. Factors and causes of cancerous diseases and mutagenic substances in the surrounding environment</li></ol> |
| 9. Teaching and Learning Strategies                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Strategy                                                                                                                              | <p>Cooperative education strategy.<br/>Teaching strategy brainstorming.<br/>Education strategy collaborative concept planning.<br/>Education strategy real time feedback<br/>Education strategy notes series.<br/>Education strategy by exchanging opinions and discussion.<br/>Education strategy by presenting information.<br/>Education strategy through training and presenting scientific developments</p>                  |

## 10. Course Structure

| Week       | Hours | ILOs                                                  | Unit/Module or Topic Title                    | Teaching Method              | Assessment Method   |
|------------|-------|-------------------------------------------------------|-----------------------------------------------|------------------------------|---------------------|
| the first  | 2     | Introduction to human genetic.                        | Introduction to human genetic                 | Video +pdf+ppt , virtual lab | Oral exams and quiz |
| The second | 2     | Cell division                                         | Cell division                                 | Video +pdf+ppt               | Oral exams and quiz |
| the third  | 2     | Type of cell division, meiosis, mitosis               | meiosis ,mitosis                              | Video +pdf+ppt               | Oral exams and quiz |
| the fourth | 2     | The chromosomes History -structure number karyotyping | karyotyping                                   | Video +pdf+ppt               | Oral exams and quiz |
| Fifth      | 2     | The chromosomes History -structure number karyotyping | Step of karyotyping                           | Video +pdf+ppt               | Oral exams and quiz |
| Sixth      | 2     | The chromosomal abnormalities                         | The chromosomal abnormalities                 | Video +pdf+ppt               | Oral exams and quiz |
| seventh    | 2     | The chromosomal abnormalities                         | Example of The chromosomal abnormalities      | Video +pdf+ppt               | Oral exams and quiz |
| Eighth     | 1     | First exam                                            |                                               |                              | First exam          |
| ninth      | 1     | Genetic disease due chromosomal abnormalities         | Genetic disease due chromosomal abnormalities |                              | Oral exams and quiz |
| The tenth  | 2     | Genetic disease due chromosomal abnormalities         | Genetic disease due chromosomal abnormalities | Video +pdf+ppt               | Oral exams and quiz |
| eleventh   | 2     | Patter of inheritance Mendel's laws                   | Patter of inheritance Mendel's laws           | Video +pdf+ppt               | Oral exams and quiz |
| twelfth    | 2     | Dominant inheritance                                  | Dominant inheritance                          | Video +pdf+ppt               | Oral exams and quiz |

## 10. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc





## Course Description

|                                                                                   |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
|-----------------------------------------------------------------------------------|---------------|-------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Name The Course                                                                |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| Immunology 1                                                                      |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 2. Course code                                                                    |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| Atu_chmML316                                                                      |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 3. Chapter / year                                                                 |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| Stage 3                                                                           |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 4. History numbers this Description                                               |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 15-8-2025                                                                         |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 5. Forms the audience Available                                                   |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| My presence                                                                       |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 6. number watches Academic (Total) number Units (Total)                           |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 4/4                                                                               |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 7. name responsible The decision Academic) if more From a name that is mentioned( |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| the name: Asst. Prof. Dr. Alaa Hashem Abdel Ali                                   |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| 8. Course objectives                                                              |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
|                                                                                   |               |                         |                            | <p>The student should be familiar with the basic concepts of the subject.</p> <p>Scientific, theoretical foundations and practical means</p> <p>Increase the effectiveness and efficiency of data analysis</p> <p>Laboratory according to the objectives of the Medical Laboratory Technology Department</p> |      |
| 9. Teaching and learning strategies                                               |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
|                                                                                   |               |                         |                            | <ul style="list-style-type: none"> <li>- Discussion The organization The reactant</li> <li>- The statement Scientific</li> <li>- learning Cooperative</li> <li>- Problem solving</li> <li>- simulation</li> <li>- brainstorming</li> <li>- role-playing</li> <li>- Workshops Cooperative</li> </ul>          |      |
| 10. Course structure                                                              |               |                         |                            |                                                                                                                                                                                                                                                                                                              |      |
| road Evaluation                                                                   | road learning | name Unity or the topic | Required learning outcomes | watches                                                                                                                                                                                                                                                                                                      | week |



|                                  |                         |                                                                                                                                                           |                                            |   |        |
|----------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|--------|
| Tests Theory and practical tests | theoretical + practical | Immunology: Definition and classification of the sections of immunity, natural and acquired immunity, factors and defenses<br>Natural immunity            | Study, knowledge and application practical | 4 | 1      |
| Tests Theory and practical tests | theoretical + practical | The immune system, tissues, and lymphocytes, their origin, recipients, and stages of maturation. Primary and                                              | Study, knowledge and application practical | 4 | 3 - 2  |
|                                  |                         | secondary lymphoid organs                                                                                                                                 |                                            |   |        |
| Tests Theory and practical tests | theoretical + practical | Monocytes, phagocytosis: Origin, maturity, recipients, types, APC antigen-presenting cells, inflammation, phagocytosis.                                   | Study, knowledge and application practical | 4 | 4      |
| Tests Theory and practical tests | theoretical + practical | Antigen: its definition, characteristics, types of antigens, Presentation of external and internal antigens                                               | Study, knowledge and application practical | 4 | 5      |
| Tests Theory and practical tests | theoretical + practical | Identifying the antigenic factors of antigenic determinants: their definition, characteristics, Antigenic determinants of T and B cells, and differences. | Study, knowledge and application practical | 4 | 6      |
| Tests Theory and practical tests | theoretical + practical | Antibody: their definition, structure of the antibody molecule, their types, and properties, antibody manufacturing and release, monoclonal antibodies.   | Study, knowledge and application practical | 4 | 7      |
| Tests Theory and practical tests | theoretical + practical | Monoclonal Antibodies: definition, manufacture, and uses.                                                                                                 | Study, knowledge and application practical | 4 | 8      |
| Tests Theory and practical tests | theoretical + practical | Antigen-antigen interactions: their properties and applications                                                                                           | Study, knowledge and application practical | 4 | 10 - 9 |
| Tests Theory and practical tests | theoretical + practical | Immune response: primary and secondary, their characteristics and differences, regulation of the immune response                                          | Study, knowledge and application practical | 4 | 11     |
| Tests Theory and practical tests | theoretical + practical | The tissue matching complex (MHC) system: its definition, types, role in antigen presentation and its relationship to organ rejection.                    | Study, knowledge and application practical | 4 | 12     |



|                                  |                         |                                                                                                                                                      |                                            |   |       |
|----------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|-------|
| Tests Theory and practical tests | theoretical + practical | Complement: its definition, activation, methods of activation, inhibitors of complement activation, diseases of complement deficiency and deficiency | Study, knowledge and application practical | 4 | 13    |
| Tests Theory and practical tests | theoretical + practical | Mediators and Cytokines                                                                                                                              | Study, knowledge and application practical | 4 | 14-15 |

### Course Two / Immunology 2 /Atu\_chmML326

|                                  |                         |                                                                                                                                                                          |                                            |   |         |
|----------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|---------|
| Tests Theory and practical tests | theoretical + practical | Clinical Immunity: Bacterial Immunity and Bacterial Mechanisms (anti-virulence)                                                                                          | Study, knowledge and application practical | 4 | 1       |
| Tests Theory and practical tests | theoretical + practical | Anti-viral immunity                                                                                                                                                      | Study, knowledge and application practical | 4 | 2       |
| Tests Theory and practical tests | theoretical + practical | Anti-parasitic immunity                                                                                                                                                  | Study, knowledge and application practical | 4 | 3       |
| Tests Theory and practical tests | theoretical + practical | Anti-fungal immunity                                                                                                                                                     | Study, knowledge and application practical | 4 | 4       |
| Tests Theory and practical tests | theoretical + practical | Anti-tumor immunity: Definition of a tumor, antigens related to the tumor, their types and their relationship to different tumors, means of escaping the body's immunity | Study, knowledge and application practical | 4 | 5 - 6   |
| Tests Theory and practical tests | theoretical + practical | Hypersensitivity: its definition, its different types, and the diseases resulting from it.                                                                               | Study, knowledge and application practical | 4 | 7 - 8   |
| Tests Theory and practical tests | theoretical + practical | Immune tolerance                                                                                                                                                         | Study, knowledge and application practical | 4 | 9       |
| Tests Theory and practical tests | theoretical + practical | Autoimmunity: its definition, means of occurrence of autoimmunity, theories, and patterns.                                                                               | Study, knowledge and application practical | 4 | 10 - 12 |
| Tests Theory and practical tests | theoretical + practical | Types of natural and acquired immune deficiencies and their causes                                                                                                       | Study, knowledge and application practical | 4 | 13      |
| Tests Theory and practical tests | theoretical + practical | Vaccination, types of vaccines                                                                                                                                           | Study, knowledge and                       | 4 | 14 - 15 |



|  |  |                          |  |  |
|--|--|--------------------------|--|--|
|  |  | application<br>practical |  |  |
|--|--|--------------------------|--|--|

### 11. Course Evaluation

The semester grade (100) is distributed as follows: 40 annual efforts divided into (10 practical grades + 25 theoretical grades + 5 activity grades) + 60 final exam grades (25 practical exam grades + 35 theoretical exam grades)

### 12. Learning and teaching resources

|                                                                                                                                           |                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|                                                                                                                                           | Required textbooks(methodologythatI found it                                     |
| Gershwin, M. E., Nestel, P., & Keen, C. L. (Eds.). •<br>(2004). Handbook of nutrition and immunity.<br>Springer Science & Business Media. | Main references(Sources)                                                         |
|                                                                                                                                           | Recommended supporting books and references<br>(scientific journals, reports...) |
|                                                                                                                                           | the reviewerelectronic,websites                                                  |



## Course Description Form

|                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Course Name:</b>                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Advanced laboratory techniques                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Course Code:</b>                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Atu_chmML317                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Semester Year:</b>                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2024/2025                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description Preparation Date:</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1/12/2024                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Available Attendance Forms:</b>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Morning study                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Number of Credit Hours (Total) / Number of Units (Total)</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 60 hours/ 4 units                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Course administrator's name (mention all, if more than one name)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Name: Dr. Qais Khadir Abdul Abbas                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Email: kais.alhadrawi@atu.edu.iq                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Course Objectives</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Course Objectives</b>                                                | Teaching this subject aims to teach the student to perform various techniques related to advanced pathological analyzes that were not included in his training programs for the previous two year study and that are related to different specialized topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Teaching and Learning Strategies</b>                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Strategy</b>                                                         | <p>At the end of this year, the student must be familiar with the following techniques:</p> <ol style="list-style-type: none"> <li>1. Advanced examinations in the field of various bodily fluids, such as urine, cerebrospinal fluid, and semen analyses, in addition to special techniques for examining stool.</li> <li>2. Diagnostic immunological tests, such as a single immunodiffusion test to diagnose complement and estimate the amounts of globins and other components of blood serum and various bodily fluids.</li> <li>3. Immunofluorescence tests and their applications in the field of microbiology and immunological diagnostics.</li> <li>4. Marking examinations with radioactive materials.</li> <li>5. Various tests for immunological electrophoresis and its modifications.</li> <li>6. Cellular immunity tests such as phagocytosis, lymphocytic transformation, etc.</li> </ol> <p style="padding-left: 40px;">Techniques related to the preparation of immunochemical materials by separation preparation methods.</p> |



### Course Structure

| Week | Hours | Required Learning Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Unit or subject name                                                                                                                                                                                                                                                                                                                                                                                             | Learning method                       | Evaluation method                                   |
|------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------|
| 15   | 4     | 1. Microbiology Introduction<br>2. Safety and principles of sterilization<br>3. Collection, Transport, Examination & reporting of specimens<br>4. Culturing of organisms: Conventional<br>5. microbiological techniques<br>6. Biochemical testing of microorganisms<br>7. Biochemical testing of microorganisms<br>8. Serological diagnostic techniques<br>9. Serological diagnostic techniques<br>10. Molecular diagnostic techniques<br>11. Molecular diagnostic techniques<br>12. Molecular diagnostic techniques<br>13. Cell and tissue culture<br>14. Biochemistry Cell homogenization and fractionation<br>15. Separation techniques overview | 1. Examination of urine<br>2. Examination of stool<br>3. Examination of sputum Swabs<br>4. Examination of CSF &<br>5. Seminal fluid<br>6. Viruses diagnosis<br>7. PCR, Hybridization, electrophoresis<br>8. Cell and tissue culture<br>9. Paper chromatography<br>10. Electrophoresis<br>11. Liver function tests<br>12. Renal profile tests<br>13. Glucose & HbA1c tests<br>14. Agglutination test<br>15. ELISA | Lectures<br>Reports<br>and discussion | oral test<br>Quiz<br>Written exam<br>Daily activity |

### Course Evaluation

Semester endeavor = 40      Final exam = 60      theoretical + practical

### Learning and Teaching Resources

|                                                                    |                                          |
|--------------------------------------------------------------------|------------------------------------------|
| Required textbooks (curricular books, if any)                      | -                                        |
| Main references (sources)                                          | Advanced laboratory techniques           |
| Recommended books and references (scientific journals, reports...) | -                                        |
| Electronic References, Websites                                    | Medical journals, laboratory diagnostics |



## Course Description

1. Name The Course

Computer Applications I

2. Course code

Atu\_chmML318

3. Chapter / year

Stage 3

4. History numbers this Description

20-8-2025

5. Forms the audience Available

My presence

6. number watches Academic (Total) number Units (Total)

2/3

7. name responsible The decision Academic) if more From a name that is mentioned (

the name: M.M. Ahmed Taklif Tali

8. Course objectives

1. The student should be familiar with the basic concepts of the subject.
2. Scientific, theoretical foundations and practical means
3. Increase the effectiveness and efficiency of data analysis
4. Laboratory according to the objectives of the Medical Laboratory Technology Department

9. Teaching and learning strategies

- Discussion The organization
- The reactant
- The statement Scientific
- Learning Cooperative
- Problem solving
- Simulation
- Brainstorming
- Role-playing
- Workshops Cooperative

## 10. Course structure

| road Evaluation                                                 | road learning           | name Unity or the topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Required learning outcomes                 | watches | week   |
|-----------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------|--------|
| Tests Theory and practical tests                                | theoretical + practical | Excel program: learning about the concept of the program, its benefits, specifications, features, and methods of operation - learning about the main screen and its components and containing various menus and effective tools - the concept of the cell, types of basic data and how to enter it - how to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Study, knowledge and application practical | 3       | 15 - 1 |
|                                                                 |                         | Save the worksheet or workbook, close the program, close the file. - Open the saved file, enter data and perform calculations, learn how to adjust or format data and its structure within a single cell or group of cells. - Learning about ways to collect data or groups of cells in their different forms, as well as how to sort data. - Using some of the functions provided by the program such as max, min, sum, ave, sqrt, count, and other useful related statistical functions. - Learning about the editing process provided by the program, how to copy data or transfer data, and learning about the concept of copying mathematical operations, as well as the concept of relative cells and absolute cells. - Controlling cell width: changing its style and format through the use of formatting tools. - Dealing with charts and how to convert digital and textual data into charts of various types through the chart wizard (chart wizard), and learning how to make the modifications and revisions provided by the program. - Learning how to add or delete rows or columns on a work page and how to print digital data or charts. |                                            |         |        |
| <b>Second course / Calculator Applications 2 / Atu_chmML328</b> |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                            |         |        |
|                                                                 |                         | The statistical program (SSPS), the concept of the program, its operation, the steps of data analysis<br>- Components of the main screen, entering data, saving and retrieving data, types of data (direct or calculated) -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                            |         |        |



|                                  |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |   |         |
|----------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|---------|
| Tests Theory and practical tests | theoretical + practical | <p>sorting and altering data, determining the statistical procedure through the statistical topics that the student addresses in Statistics lessons - How to insert a variable or case, merge files, analyze (analytical) descriptive statistics, recognize the statistical summary of the given data and benefit from the data it provides in exploring data or reports for columns or rows - perform a comparison of means, comparison between variables or regression - Conducting some identifying non-parametric tests (such as chi square, square. - Applications of quality</p>                                 | Study, knowledge and application practical | 3 | 10 - 1  |
|                                  |                         | <p>control panels. - Dealing with charts (such as lines, histograms, pie charts, bar charts, scatter diagram graphs. And others. - Dealing with orders Summarize (cross tabs). custom tables (basic tables) ANOVA models (one-way). nonparametric methods (one sample two independent samples. two samples related several samples independent several samples related).</p>                                                                                                                                                                                                                                           |                                            |   |         |
| Tests Theory and practical tests | theoretical + practical | <p>PowerPoint program: The concept of the program and its benefits, its operation, components of the main screen, and the concept of presentations (and their benefits). - Building a new presentation through the templates provided by the program or interacting directly, storing the presentation, making the presentation, making modifications, and saving changes. - Planning to build the presentation, inserting a new slide, whether it contains text or an image, entering notes, entering the main headings (headers) or (footers) for the slide - learning how to add drawings through the available</p> | Study, knowledge and application practical | 3 | 15 - 11 |



drawing tools, modifying the text, controlling its format, styling, and changing the plan, controlling the colors and background of the slide - Adding a clip chart and ways to control it, such as zooming in and out or cropping, adding natural images and tools to control them, adding charts from Excel or a data page from databases - dealing with various display commands such as timing, moving from one slide to another and their methods, animation methods, and setting sound effects for slides.

### 11. Course Evaluation

The semester grade (100) is distributed as follows: 40 annual efforts divided into (10 practical grades + 25 theoretical grades + 5 activity grades) + 60 final exam grades (25 practical exam grades + 35 theoretical exam grades)

### 12. Learning and teaching resources

|                                                                                                                                                                                                                                                                            | Required textbooks(methodologythatI found it                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| <p>Szeliski, R. (2022). Computer vision: algorithms and applications. Springer Nature.</p> <p>Shortliffe, E. H., Shortliffe, E. H., Cimino, J. J., &amp; Cimino, J. J. (2014). Biomedical informatics: computer applications in health care and biomedicine. Springer.</p> | Main references(Sources)                                                      |
|                                                                                                                                                                                                                                                                            | Recommended supporting books and references (scientific journals, reports...) |
|                                                                                                                                                                                                                                                                            | the reviewer electronic, websites                                             |



## Course Description

|                                                             |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------|---------------|-------------------------|----------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Name The Course                                          |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| Virology                                                    |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 2. Course code                                              |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| Atu_chmML323                                                |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 3. Chapter / year                                           |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| Stage 3                                                     |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 4. History numbers this Description                         |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 20-8-2025                                                   |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 5. Forms the audience Available                             |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| My presence                                                 |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 6. number watches Academic (Total) number Units (Total)     |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 4/4                                                         |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 7. nameCourse Leader) if moreFrom a name that is mentioned( |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| the name: MDr. Hassan Aqil Majeed                           |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| 8. Course objectives                                        |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
|                                                             |               |                         |                            |         | <p>The student should be familiar with the basic concepts of the subject.</p> <p>Scientific, theoretical foundations and practical means</p> <p>Increase the effectiveness and efficiency of data analysis</p> <p>Laboratory according to the objectives of the Medical Laboratory Technology Department</p> |
| 9. Teaching and learning strategies                         |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
|                                                             |               |                         |                            |         | <ul style="list-style-type: none"> <li>- Discussion The organization The reactant</li> <li>- The statement Scientific - learning Cooperative</li> <li>- Problem solving - simulation</li> <li>- brainstorming - role-playing</li> <li>- Workshops Cooperative</li> </ul>                                     |
| 10. Course structure                                        |               |                         |                            |         |                                                                                                                                                                                                                                                                                                              |
| road Evaluation                                             | road learning | name Unity or the topic | Required learning outcomes | watches | week                                                                                                                                                                                                                                                                                                         |



|                                  |                         |                                                                                           |                                            |   |    |
|----------------------------------|-------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------|---|----|
| Tests Theory and practical tests | theoretical + practical | General properties of Viruses. Structure, Classification and Nomenclature of the Viruses. | Study, knowledge and application practical | 4 | 1  |
| Tests Theory and practical tests | theoretical + practical | Atypical Virus-like agents (Prions, Defective viruses, Pseudovirion and Viriods).         | Study, knowledge and application practical | 4 | 2  |
| Tests Theory and practical tests | theoretical + practical | Viral Genetic and Molecular & Viral Replication.                                          | Study, knowledge and application practical | 4 | 3  |
| Tests Theory and practical tests | theoretical + practical | Viral Pathogenesis and Transmission                                                       | Study, knowledge and application practical | 4 | 4  |
| Tests Theory and practical tests | theoretical + practical | Immunity & Laboratory Diagnosis of Viruses                                                | Study, knowledge and application practical | 4 | 5  |
| Tests Theory and practical tests | theoretical + practical | Herpes virus                                                                              | Study, knowledge and application practical | 4 | 6  |
| Tests Theory and practical tests | theoretical + practical | Hepatitis virus                                                                           | Study, knowledge and application practical | 4 | 7  |
| Tests Theory and practical tests | theoretical + practical | Hepatitis virus                                                                           | Study, knowledge and application practical | 4 | 8  |
| Tests Theory and practical tests | theoretical + practical | Human Immune Deficiency Virus                                                             | Study, knowledge and application practical | 4 | 9  |
| Tests Theory and practical tests | theoretical + practical | Orthomyxovirus                                                                            | Study, knowledge and application practical | 4 | 10 |
| Tests Theory and practical tests | theoretical + practical | Paramyxovirus                                                                             | Study, knowledge and application practical | 4 | 11 |
| Tests Theory and practical tests | theoretical + practical | Enteric viruses (Rota, Polio and Reoviruses)                                              | Study, knowledge and application practical | 4 | 12 |
| Tests Theory and practical tests | theoretical + practical | Rabies and other Neurotropic viruses                                                      | Study, knowledge and application practical | 4 | 13 |



|                                 |                         |             |                                            |   |    |
|---------------------------------|-------------------------|-------------|--------------------------------------------|---|----|
| Test Theory and practical tests | theoretical + practical | Poxvirus    | Study, knowledge and application practical | 4 | 14 |
| Test Theory and practical tests | theoretical + practical | Coronavirus | Study, knowledge and application practical | 4 | 15 |

### 11. Course Evaluation

The semester grade (100) is distributed as follows: 40 annual efforts divided into (10 practical grades + 25 theoretical grades + 5 activity grades) + 60 final exam grades (25 practical exam grades + 35 theoretical exam grades)

### 12. Learning and teaching resources

|                                                                                                                                    |                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|                                                                                                                                    | Required textbooks(methodologythatI found it                                  |
| Aiyer, P. V. D. (2018). Introduction to Microbiology Volume Two: Virology, Mycology & Environmental Microbiology. Idea Publishing. | Main references(Sources)                                                      |
|                                                                                                                                    | Recommended supporting books and references (scientific journals, reports...) |
|                                                                                                                                    | the reviewerelectronic,websites                                               |



## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1.Course name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
| Endocrinology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
| 2.Course code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
| Atu_chmML324                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| 3.semester/year:second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |
| 2024/2025 (Separate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |
| 4.Date this description was prepared                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |
| 18/8/2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |
| 5.Available attendance forms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| <p>Halls inside The process Theory For lectures Students presence(Face-to-Face / On-Campus): My presence1. and laboratories Academic</p> <p>(Online Asynchronous):synchronous not electronic2.</p> <p>time any in For students Available)Registered Lectures ,files ,video(educational Materials or Lectures</p> <p>To Vitality Chemistry Laboratories in Students presence(Practical / Laboratory-Based):practical3. My application The process and training experiments conduct</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |
| Number of study hours (total)/ Number of units (total)Y): .6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| 2 theoretical + 4 practical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |
| Course Instructor Name: .7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |
| Name: Fahad Dakhil Fahad                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |
| Email: fahad.fahad@atu.edu.iq                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |
| 8.Course objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |
| <p>Introduce the student to the basic concepts of endocrinology. .1</p> <p>Empower the student to understand the endocrine glands and their essential role in the metabolic .2 processes in the human body.</p> <p>Introduce the student to the types of glands and the role of each gland. .3</p> <p>Familiarize the student with the hormones secreted by each gland and their role in the human body. .4</p> <p>Equip the student with the ability to interpret hormonal laboratory results and relate them to .5 pathological conditions specific to the glands.</p> <p>Second: Program Skills Objectives (Practical/Technical Skills Objectives)</p> <p>Master the preparation of solutions and chemical reagents required for hormonal tests. .1</p> <p>Train the student in the practical use of laboratory equipment for hormonal testing (such as MINI .2 VIDAS devices).</p> <p>Develop the student's skill in performing hormonal tests accurately and safely. .3</p> <p>Enable the student to follow safety and biosecurity procedures in the laboratory. .4</p> <p>Develop the student's ability to record and document laboratory results and analyze them statistically .5 when necessary. 6. Enhancing the student's skill in solving problems encountered during clinical experiments or examinations.</p> | Course objectives |
| 9.Teaching and learning strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |
| <p>Interactive lectures: To explain theoretical concepts and link them to clinical applications. .1</p> <p>Practical laboratory instruction: To train students to perform examinations and use equipment .2 accurately and safely.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Strategy          |



.accurately and safely

Problem-based learning: Through discussing clinical cases and analyzing examination results .3

Cooperative learning: Through students working in small groups to enhance communication .4  
.and teamwork skills

Projects and short reports: To develop scientific research skills, analyze results, and write them .5  
.up

Evaluation methods

.Midterm and final exams to measure theoretical and cognitive aspects .1

Practical reports to evaluate student performance in the laboratory and the accuracy of .2  
.recording results

.Practical exams to measure hormonal skills .3

Class participation and discussions to measure student engagement and understanding of the .4  
.material

.Projects or short research to assess research, analysis, and scientific writing skills .5

Course structure.10  
semesterthe second

| week      | watch<br>es                                  | Required<br>learning<br>outcomes                                                                                                                                                                                                                                                                                                                                                                                                | Name of unit or<br>topic                                                           | Learning<br>method                                                                                                                                                                                                                                                                                                               | Evaluation method                                                                                                                                                                                                                                                                                              |
|-----------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| the first | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Define.1<br>endocrine<br>.glands<br>Identify the .2<br>types of<br>endocrine<br>.glands<br>Define .3<br>,hormones<br>,their types<br>and<br>.classifications<br>Apply safety .4<br>rules and use<br>personal<br>protective<br>equipment<br>correctly<br>during<br>laboratory<br>.work<br>Commit to .5<br>professionalis<br>.m<br>,confidentiality<br>and teamwork<br>when handling<br>samples and<br>laboratory<br>data. during | Introduction to<br>,endocrinology<br>safety regulations<br>and quality<br>.control | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>,Projects small<br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |



|                                   |                                              |                                                                                                                                                                                                                                                           |                                     |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   |                                              | the job<br>.Laboratory<br>Commitmen.5<br>t<br>,Professionally<br>confidentiality<br>And work In ,<br>spirit team<br>during<br>Dealing with<br>Samples and<br>data<br>Laboratory                                                                           |                                     |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    |
| the<br>second<br><br>the<br>third | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Identify the .1<br>types of<br>mechanisms<br>by which<br>hormones<br>.work<br><br>Understand .2<br>the<br>mechanism by<br>which each<br>type of<br>hormone<br>.works<br><br>Identify the .3<br>stimulators<br>and inhibitors<br>of hormone<br>.mechanisms | Hormones<br>mechanisms              | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |
| Fourth                            | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Identifying<br>-hypothalamus<br>releasing<br>factors                                                                                                                                                                                                      | -hypothalamus<br>.releasing factors | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |
| Fifth                             | 2<br>theore                                  | Learn about<br>the anterior                                                                                                                                                                                                                               | anterior pituitary                  | Lectures<br>Interactive with                                                                                                                                                                                                                                                                                                     | side theoretical:Questions to<br>,choose from Multiple, Article                                                                                                                                                                                                                                                    |



|                          |                                              |                                                                           |               |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------|---------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | + tical<br>4<br>practic<br>al                | pituitary gland<br>and its role in<br>the human<br>.body                  | gland         | Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory                                 | .and questions condition Clinical<br>side practical:evaluation•<br>.performance in laboratory<br>.writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students                                                                    |
| Sixth                    | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about<br>MSH hormon<br>and its role in<br>the human<br>.body        | MSH hormon    | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>.performance in laboratory<br>.writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |
| Seventh<br>The<br>eighth | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about<br>the Thyroid<br>gland and its<br>role in the<br>.human body | Thyroid gland | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For                                                             | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>.performance in laboratory<br>.writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |



|                     |                                              |                                                                                     |                   |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------|-------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                              |                                                                                     |                   | paths<br>metabolism<br>And the<br>analyses<br>Laboratory                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                    |
| Ninth               | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about .1<br>the<br>paraThyroid<br>gland and its<br>role in the<br>.human body | paraThyroid gland | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>,and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>,Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |
| tenth               | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about<br>the panres<br>gland and its<br>role in the<br>.human body            | the panres gland  | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>,and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>,Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |
| eleventh<br>twelfth | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about<br>the adrenal<br>gland and its<br>role in the<br>.human body           | the adrenal gland | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented                                                                                                                                                                        | side theoretical:Questions to<br>,choose from Multiple, Article<br>,and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>,Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow                      |



|                                 |                                              |                                                                                                                                                                                   |                                                                                |                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                              |                                                                                                                                                                                   |                                                                                | discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory                                                                                                                                                              | progress students                                                                                                                                                                                                                                                                                                  |
| thirteen<br>th                  | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about<br>the gonadal<br>gland and its<br>role in the<br>.human body                                                                                                         | gonadal gland .                                                                | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |
| fourtee<br>nth<br>fifteen<br>th | 2<br>theore<br>+ tical<br>4<br>practic<br>al | Learn about<br>the Several<br>other glandular<br>tissues are<br>considered to<br>secrete<br>hormones,<br>viz.:(JG cells of<br>kidney,<br>Thymus, Pineal<br>gland and GI<br>tract. | Several other .<br>glandular tissues are<br>considered to secrete<br>.hormones | Lectures<br>Interactive with<br>Offers Visual<br>and drawings<br>.Illustrative<br>experiments•<br>Operation in<br>Laboratory<br>with steps<br>.Documented<br>discussions•<br>Cases Clinical<br>To apply<br>.Theory<br>Use Programs•<br>simulation<br>Interactive For<br>paths<br>metabolism<br>And the<br>analyses<br>Laboratory | side theoretical:Questions to<br>,choose from Multiple, Article<br>.and questions condition Clinical<br>side practical:evaluation•<br>,performance in laboratory<br>,writing Reports Laboratory<br>.Projects small<br><br>Review Periodical:Questions•<br>short after all lonliness To follow<br>progress students |



| Second semester                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Course Evaluation .11                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                              |
| The semester grade (100) is distributed as follows: The following: 40 annual endeavors divided into (10 practical points + 25 theoretical points + 5 activity points) + 60 final exam points (25 practical exam points + 35 theoretical exam points) |                                                                                                                                                                                                                                                                                                                              |
| Learning and teaching resources .12                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                              |
| Required textbooks (methodology that I found it)                                                                                                                                                                                                     | (2023) Lippincott Illustrated Reviews: Biochemistry, 8th Edition                                                                                                                                                                                                                                                             |
| Main references (Sources)                                                                                                                                                                                                                            | Lehninger Principles of Biochemistry<br>Harper's Illustrated Biochemistry<br>(Biochemistry (by Berg, Tymoczko, Gatto, Stryer                                                                                                                                                                                                 |
| Recommended supporting books and references scientific journals (...reports                                                                                                                                                                          | solid global research                                                                                                                                                                                                                                                                                                        |
| the review electronic, web sites                                                                                                                                                                                                                     | Google Chrome, YouTube                                                                                                                                                                                                                                                                                                       |
| Curriculum Development Plan                                                                                                                                                                                                                          | .to merge Latest Devices and technologies in laboratory•<br>.to update content Chemistry Vitality including Compatible with Latest Research Scientific•<br>.Strengthening Linking between Chemistry Vitality and analysis Clinical•<br>addition Units Optional Advanced For students Those who wish in Specialization Flour• |

# **Fourth Stage**



## Course Description Form

| <b>1. Course Name:</b>                                                             |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
|------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------|
| Clinical Immunity                                                                  |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>2. Course Code:</b>                                                             |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| Atu_chmML411                                                                       |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>3. Semester / Year:</b>                                                         |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| 2024-2025 / year                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>4. Description Preparation Date:</b>                                            |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| 20 / 8 / 2024                                                                      |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>5. Available Attendance Forms:</b>                                              |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| attendance is mandatory                                                            |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>                 |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| 180 hours per year (6 hours per week) (60 theoretical hours + 120 practical hours) |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>7. Course administrator's name (mention all, if more than one name)</b>         |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| Name: Asst prof Dr Radhia Hussain Fadel                                            |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| Email: kuh.radhia@atu.edu.iq                                                       |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>8. Course Objectives</b>                                                        |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>Course Objectives</b>                                                           |                             |                                                                                                                                                                                                                                                                                                                                                                                                         | Introducing and understanding students to clinical immunology, its scientific division, and the most important common and rare immunological diseases<br>The pathological mechanism of the disease is also understood and the student is introduced to the general clinical symptoms of immune diseases |                                   |                                     |
| <b>9. Teaching and Learning Strategies</b>                                         |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>Strategy</b>                                                                    |                             | Giving detailed theoretical lectures according to the course <ul style="list-style-type: none"> <li>• Electronic lectures</li> <li>• Requesting periodic reports on the basic topics of the subject (immune diseases) and others related to it</li> <li>• Request periodic reports on immunological tests for each disease</li> <li>• Conducting experiments and participating with learners</li> </ul> |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| <b>10. Course Structure</b>                                                        |                             |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                   |                                     |
| Week                                                                               | Hours                       | Required Learning Outcomes                                                                                                                                                                                                                                                                                                                                                                              | Unit or subject name                                                                                                                                                                                                                                                                                    | Learning method                   | Evaluation method                   |
| 1                                                                                  | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and                                                                                                                                                                                                                                                                                                                                     | Rheumatoid Arthritis<br>Rheumatoid Diseases                                                                                                                                                                                                                                                             | Lectures presented in power point | Daily exams + practical experiments |



|   |                             |                                                                                                      |                                                                       |                                                                                             |                                                              |
|---|-----------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------|
|   |                             | laboratory diagnostic methods                                                                        |                                                                       | format, written lectures, discussion method, and asking question                            | And a report on t lesson                                     |
| 2 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods. | <b>Systemic Lupus Arythromatosis</b>                                  | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 3 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>Ankylosing Spondylitis</b>                                         | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 4 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>Sjogren syndrome</b>                                               | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 5 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>Behcet Disease + Psoriatic Arthritis</b>                           | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 6 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>Celiac disease + Diabetic type 1 Pernicious Anemia</b>             | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 7 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>1-Ulcerative colitis<br/>2-Crohns Disease<br/>3.MALT</b>           | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 8 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>Autoimmune Hepatitis<br/>Autoimmune liver diseases</b>             | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |
| 9 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods  | <b>1.Primary Biliary Cirrhosis<br/>2.Primary Sclerosi Cholangitis</b> | Lectures presented power point forma written lectures, discussion method and asking questio | Daily exams + practical experiments And a report on t lesson |



|    |                             |                                                                                                   |                                                                                                           |                                                                                                |                                                                |
|----|-----------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 10 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>Renal Diseases</b><br><b>Immune mechanisms associated with auto-Antibodies</b>                         | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 11 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>Antineutrophil Cytoplasmic Autoantibodies and associated disease</b>                                   | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 12 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>T Lymphocyte mediated Renal Injury</b><br><b>Immunological Mediators in Acute inflammation</b>         | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 13 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>Lymphocyte mediated Renal Injury</b><br><b>Immunological Mediators in Acute inflammation</b>           | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 14 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>1. Postinfectious Glomerulonephritis</b><br><b>+ 2. IgA Nephropathy</b>                                | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 15 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>1. Lupus Nephritis</b><br><b>2. Henoch-Schönlein Purpura</b>                                           | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 16 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>1. Vasculitis-Associated Glomerular Lesion</b><br><b>2. Anti-Glomerular Basement Membrane Diseases</b> | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 17 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of disease, symptoms, and laboratory diagnostic methods | <b>Respiratory diseases</b><br><b>1-Drug-induced Respiratory diseases</b>                                 | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |



|         |                             |                                                                                                     |                                                                                               |                                                                                                |                                                                |
|---------|-----------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 18      | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Eosinophilic Pneumonia + Occupational &amp; Environmental lung Diseases</b>                | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 19      | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Asthma</b>                                                                                 | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 20      | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Non-Allergic Bronchitis</b>                                                                | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 21 + 22 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Hypersensitivity Disease and associated it</b>                                             | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 23      | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Auto immune Hemolytic Anemia</b>                                                           | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 24      | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Eczema + Dermatitis</b>                                                                    | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 25 + 26 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Endocrinology ( Immunological Thyroid Diseases , Immunological Infertility and other )</b> | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 27 + 28 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Tumors and Tumor Markers</b>                                                               | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |
| 29 + 30 | 6<br>2 theory<br>4 practice | The student learns about immune mechanism of t disease, symptoms, and laboratory diagnostic methods | <b>Graft versus host rejection and Transplantation</b>                                        | Lectures presented power point format written lectures, discussion method and asking questions | Daily exams + practical experiments And a report on the lesson |



|                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |         |                                                                                                              |                      |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------|--------------------------------------------------------------------------------------------------------------|----------------------|--------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | methods |                                                                                                              | and asking questions | lesson |
| <b>11.Course Evaluation</b>                                                                                                                                                                                                                                                                                                                                                                                                       |  |         |                                                                                                              |                      |        |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ....etc<br>First semester = 10 theoretical + 10 practical = 20<br>Second semester = 10 theoretical + 10 practical = 20<br>The ultimate pursuit of the student = 20 + 20 = 40<br>The theoretical final exam = 40<br>The practical final exam = 20<br>Total degree = 100 |  |         |                                                                                                              |                      |        |
| <b>12.Learning and Teaching Resources</b>                                                                                                                                                                                                                                                                                                                                                                                         |  |         |                                                                                                              |                      |        |
| Required textbooks (curricular books, if any)                                                                                                                                                                                                                                                                                                                                                                                     |  |         | Essential of clinical immunity/ Helen Chap<br>Clinical immunity/ Angela Hall, Chris Scot<br>and Matthew Buck |                      |        |
| Main references (sources)                                                                                                                                                                                                                                                                                                                                                                                                         |  |         | <b>Immunology / Kuppi</b>                                                                                    |                      |        |
| Recommended books and references (scientific journals, reports...)                                                                                                                                                                                                                                                                                                                                                                |  |         | British Journal of clinical immunology<br>German Journal of clinical immunology                              |                      |        |
| Electronic References, Websites                                                                                                                                                                                                                                                                                                                                                                                                   |  |         | Pub med.gov & NCBI                                                                                           |                      |        |

## Course Description Form



1. Course Name: **Diagnostic Microbiology**

2. Course Code: **Atu\_chmML412**

3. Semester / Year: **/2024-2025**

4. Description Preparation Date: **10/2024**

5. Available Attendance Forms: **Morning/evening**

6. Number of Credit Hours (Total) / Number of Units (Total) **4 unit**

**60 hours**

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

**Dr. Ruaa mohammed hussan hassan**  
**rua.hasanckm@atu.edu.iq**

### 8. Course Objectives

- |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Course Objectives</b> | <ul style="list-style-type: none"> <li>• <b>First: Cognitive Objectives</b><br/>in this course, the student will be able to diagnose bacteria in an acceptable manner<br/>Able to manage bacteriological laboratories</li> <li>• <b>Secondly: Skill-based Objectives</b><br/>Diagnosis of microorganisms using all available and prescribed methods<br/>It is included in the brochures of the World Health Organization (W.H.O.).</li> </ul> |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 9. Teaching and Learning Strategies

- |                 |                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategy</b> | <p>Teaching strategy brainstorming.</p> <p>Education strategy collaborative concept planning.</p> <p>Education strategy real-time feedback</p> <p>Education strategy notes series.</p> <p>Education strategy by exchanging opinions and discussion.</p> <p>Education strategy by presenting information.</p> <p>Education strategy through training and presenting scientific developments.</p> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 10. Course Structure

| Week | Hours    | Required Learning Outcomes            | Unit or subject name   | Learning method                                                | Evaluation method                            |
|------|----------|---------------------------------------|------------------------|----------------------------------------------------------------|----------------------------------------------|
| 1    | 2T + 4 P | Course objectives and analyst duties. | Purpose and philosophy | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |



|    |          |                                                                |                                                |                                                                  |                                              |
|----|----------|----------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|
| 2  | 2T + 4 P | Safe Laboratory and Skilled Work...                            | Laboratory safety                              | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 3  | 2T + 4 P | Identifying and selecting the clinical sample and analyzing it | Selection, of specimen                         | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 4  | 2T + 4   | Sample collection                                              | collection, of specimen                        | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 5  | 2T + 4   | Transferring the sample to the laboratory for analysis         | Transport of specimen                          | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 6  | 2T + 4   | Cultivation and growth of live bacteria on media               | Cultivation and Isolation of Viable Pathogen   | - Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 7  | 2T + 4   | Methods of diagnosing microbes... 1                            | Microbiological methods for identification,, 1 | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 8  | 2T + 4   | Methods of diagnosing microbes... 2                            | Microbiological methods for identification...2 | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 9  | 2T + 4   | Methods of diagnosing microbes... 3                            | Microbiological methods for identification     | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 10 | 2T + 4   | Student knowledge of identifying the appropriate antidote for  | Antibiotic susceptibility tests                | Lectures and practical lessons<br>-Discussion                    | Theory exams<br>- practical<br>- Discussions |
|    |          | treatment ..... 1                                              |                                                | Brainstorming                                                    |                                              |



|    |        |                                                                               |                                    |                                                                |                                              |
|----|--------|-------------------------------------------------------------------------------|------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| 11 | 2T + 4 | Student knowledge of identifying the appropriate antidote for treatment.....2 | Antibiotic susceptibility tests    | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 12 | 2T + 4 | Bloodstream infections.... 1                                                  | Bloodstream infections .... 1      | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 13 | 2T + 4 | Bloodstream infections.... 2                                                  | Bloodstream infections .... 2      | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 14 | 2T + 4 | Diagnosis of bacteria causing meningitis and the nervous system... 1          | Meningitis and infections of (CNS) | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 15 | 2T + 4 | Diagnosis of bacteria causing meningitis and the nervous system... 2          | Meningitis and infections of (CNS) | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 16 | 2T + 4 | Diagnosis of respiratory infections..... 1                                    | respiratory tract infections       | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 17 | 2T + 4 | Diagnosis of respiratory infections..... 2                                    | respiratory tract infections       | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 18 | 2T + 4 | Urinary tract infection1                                                      | Infection (UTI)                    | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 19 | 2T + 4 | Urinary tract infection2                                                      | Infection (UTI)                    | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 20 | 2T + 4 | Diagnosis of reproductive system causes                                       | Genital Tract Infections           | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
|    |        |                                                                               |                                    | Brainstorming                                                  |                                              |

|    |        |                                                       |                                                    |                                                                |                                              |
|----|--------|-------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| 21 | 2T + 4 | Diagnosis of gastrointestinal tract infections..... 1 | Bacterial Infections of (GIT)                      | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 22 | 2T + 4 | Diagnosis of gastrointestinal tract infections..... 1 | Bacterial Infections of (GIT)                      | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 23 | 2T + 4 | Diagnosis of eye, ear and sinus infections ... 1      | Bacterial infections of eyes, ears and sinuses     | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 24 | 2T + 4 | Diagnosis of eye, ear and sinus infections ... 2      | Bacterial infections of eyes, ears and sinuses     | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 25 | 2T + 4 | Diagnosis of eye, ear and sinus infections ... 3      | Bacterial infections of eyes, ears and sinuses     | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 26 | 2T + 4 | Skin, soft tissue and wound infections                | Skin, Soft tissue and wound infection              | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 27 | 2T + 4 | Body fluid, bone and bone marrow infections           | Normally Sterile Body Fluids, Bone and Bone Marrow | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 28 | 2T + 4 | Diagnosis of parasitic diseases                       | diagnosis of parasitic infections                  | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 29 | 2T + 4 | Diagnosis of fungal diseases                          | Laboratory methods in basic mycology               | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 30 | 2T + 4 | Diagnosis of viral diseases                           | Laboratory methods in basic virology               | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
|    |        |                                                       |                                                    | Brainstorming                                                  |                                              |

### 11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ..... etc

### 12.Learning and Teaching Resources

|                                                                    |                                                                                          |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | 1-Diagnostic Microbiology                                                                |
| Main references (sources)                                          | Hall, Gerri S. "Bailey & Scott's diagnostic microbiology, 13th edn." (2013): c138-c139.  |
| Recommended books and references (scientific journals, reports...) |                                                                                          |
| Electronic References, Websites                                    | General Microbiology, -<br>Pathogenic Bacteria -<br>Text book of Diagnostic Microbiology |

## Course Description Form



1. Course Name: Advanced clinical chemistry

2. Course Code: Atu\_chmML413

3. Semester / Year: 1<sup>st</sup> semester /2024-2025

4. Description Preparation Date: 10/1/2025

5. Available Attendance Forms: Morning

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

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

Name: ali muhamad abd hamuwd

Email:

### 8. Course Objectives

#### Course Objectives

#### • A knowledge:

• A1: Introducing the student to the basic principles related to pathological analyzes in clinical chemistry.

A2 Introducing the student to the theoretical and practical foundations of laboratory tests in clinical chemistry for various diseases.

A3 Particular emphasis on examinations of some organs related to biochemical compounds A4 Introducing important experiments using modern technologies in laboratory diagnosis, so as to give the student a new opportunity to learn about what is new.

#### • B- Skills:

• B1 The student should be able to acquire basic knowledge and skills in clinical chemistry



B2 Teaching the student how to become able to think logically, analyze, and employ the prescribed curriculum vocabulary.

B3 Developing the student's mental and personal ability in his specialty is an important part of his field of specialization.

B4 Providing the student with communication skills and using modern educational technologies effectively.

**C Ethics:**

C1: The student should be able to work collectively and work individually to conduct clinical chemistry analyses.

C2: The student should be able to use information technology to search for information.

C3: The student should be able to communicate with the professor and colleagues.

C4: The student must be able to rely on himself.

### Teaching and Learning Strategies

#### Strategy

Lectures and practical lessons - outcome-based learning - learning project-based learning - group work-based learning - problem-based learning - community-based learning - self-learning.

### 1. Course Structure

| Week | Hours    | Required Learning Outcomes                                                                                                                                                                           | Unit or subject name                                                                                                                                                                                               | Learning method                                                | Evaluation method                            |
|------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| 1&2  | 2T + 4 P | - Introducing the student to the basic principles related to pathological analyzes in clinical chemistry<br>- The student should be able to acquire basic knowledge and skills in clinical chemistry | Laboratory Safety:<br>1- Safety awareness of persons and safety equipment's.<br>2- Chemical safety.<br>3- Biological safety<br>4- fire safety and control of other hazards.<br>5- Disposal of hazardous materials. | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 3    | 2T + 4 P | - Introducing the student to the theoretical and practical foundations                                                                                                                               | Requesting lab results<br>Classification of request card in laboratory                                                                                                                                             | Lectures and practical lessons<br>-Discussion                  | Theory exams<br>- practical<br>- Discussions |



|              |          |                                                                                                                                             |                                                                                                                                                                                                                           |                                                                  |                                              |
|--------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|
|              |          | of laboratory tests in clinical chemistry for various diseases                                                                              | interpretation of selective test & screening test                                                                                                                                                                         | Brainstorming                                                    |                                              |
| 4            | 2T + 4 P | - Particular emphasis on examinations of some organs related to biochemical compounds                                                       | 1- Specimen collection (urine, blood, faeces, cerebrospinal fluid and other body fluids).<br>2- Specimen Handling (maintenance of identification, preservation, separation, storage and transport of specimens            | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 5,6,7        | 2T + 4 P | - Particular emphasis on examinations of some organs related to biochemical compounds                                                       | Quality Management:<br>1- Fundamentals of total quality management.<br>2- The total testing processes.<br>3- Control of preanalytical variables.<br>4- Control of analytical variables.<br>5- External quality assessment | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
| 8,9,10,11,12 | 2T + 4 P | - Introducing important experiments using modern techniques in laboratory diagnosis to give the student a new opportunity to learn about... | Advanced technique in clinical chemistry lab                                                                                                                                                                              | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |
|              | 2T + 4 P | - Providing the student with communication skills and using modern educational technologies effectively.                                    | Genetic disease due chromosomal abnormalities                                                                                                                                                                             | - Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 13,14        | 2T + 4 P | - Introducing the student to the theoretical and practical foundations of laboratory tests in clinical                                      | Computers in clinical chemistry                                                                                                                                                                                           | Lectures and practical lessons<br>-Discussion<br>Brainstorming   | Theory exams<br>- practical<br>- Discussions |



|             |          |                                                                                                                                                                                                                         |                                                                         |                                                                |                                              |
|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
|             |          | chemistry for various diseases                                                                                                                                                                                          |                                                                         |                                                                |                                              |
| 15,16,17,18 | 2T + 4 P | - Introducing the student to the theoretical and practical foundations of laboratory tests in clinical chemistry for various diseases                                                                                   | Pediatric clinical chemistry                                            | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 19,20,21    | 2T + 4 P | - Particular emphasis on examinations of some organs related to biochemical compounds<br>- The student should be able to communicate with the professor and colleagues<br>- The student must be able to rely on himself | Functional tests in clinical chemistry and profile tests investigations | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 22          | 2T + 4 P | - Particular emphasis on examinations of some organs related to biochemical compounds<br>- The student should be able to work collectively and work individually to conduct clinical chemistry analyses                 | Problems in biochemistry calculation                                    | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 23,up       | 2T + 4 P | - Particular emphasis on examinations of some organs related to biochemical compounds.<br>- The student should be able to work collectively and work individually to conduct clinical chemistry analyses                | Case studies in clinical chemistry                                      |                                                                |                                              |

## 2. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

### 3. Learning and Teaching Resources

|                                                                    |                                                                                                                                                                |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Lectures - presentation                                                                                                                                        |
| Main references (sources)                                          | Katherine J. Denniston, Danae Quirk, Joseph J. Topping, Robert Caret - General, Organic, and Biochemistry-McGraw-Hill (2022)                                   |
| Recommended books and references (scientific journals, reports...) | Spencer L. Seager, Michael Slabaugh, Maren S. Hansen Chemistry for Today_ General Organic, and Biochemistry-Cengage Learning ( 2021)                           |
| Electronic References, Websites                                    | <a href="https://www.sciencedirect.com/">https://www.sciencedirect.com/</a><br><a href="https://pubmed.ncbi.nlm.nih.gov/">https://pubmed.ncbi.nlm.nih.gov/</a> |

## Course Description Form



1. Course Name: Diagnostic parasitology1

2. Course Code: Atu\_chmML414

3. Semester / Year: 1<sup>st</sup> semester /2024 -2025

4. Description Preparation Date: 1 /12/2024

5. Available Attendance Forms: Morning

6. Number of Credit Hours (Total) / Number of Units (Total) 4unit

30 hours

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

Dr. Sara ali hameed

### 8. Course Objectives

Course Objectives

This course aims to introduce students to the basic concepts of medical parasitology whether parasitic worms or protozoa, and to identify all diseases transmitted by parasites and their methods of transmission, as well as their diagnosis, as students learn the different laboratory diagnostic mechanisms and their degree of accuracy in diagnosis, as well as methods of combating the vectors of these parasites and preventing them. In addition, students learn the pathology of each parasite and different clinical symptoms associated with the type of parasite and some antiparasitic drugs.

1. During the academic year, the student learns important definitions in medical parasitology.

2- During the academic year, the student learns about the classification of different parasitic diseases.

3- The student differentiates between parasites according to their location: cutaneous, genital, intestinal, etc.

4- The student uses the appropriate laboratory diagnostic methods for each disease.

5- The student determines the use of some laboratory devices and repeats previous experiments related to diagnosis.

6- During the academic year, the student learns about the body's immune defense methods against different parasites.

### 9. Teaching and Learning Strategies

Strategy

Lectures and practical lessons - outcome-based learning - learning project-based learning - group work-based learning - problem-based learning - community-based learning - self-learning.

### 10. Course Structure

| Week | Hours | Required Learning | Unit or subject name | Learning method | Evaluation method |
|------|-------|-------------------|----------------------|-----------------|-------------------|
|------|-------|-------------------|----------------------|-----------------|-------------------|



|   |        | <b>G Outcomes</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                |                                              |
|---|--------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------|
| 1 | 2T + 4 | Student understanding of the topic | <b>Recent classification of parasite.</b><br><b>Systematic grouping of parasites*</b><br><b>General terms used in parasitology.</b><br>Introduction; Parasites; Host; Zoonosis;<br>Host-parasite Relationships 3; Life Cycle of Parasites; Sources of Infection; Modes of Infection; Pathogenesis; Immunity Infection; Laboratory Diagnosis                                                                                                    | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 2 | 2T + 4 | Student understanding of the topic | <b>Protozoa:</b> General Features; Structure; Reproduction; Life Cycle; Classification of Protozoa; Phylum Sarcostomastigophora; Phylum Apicomplexa; Phylum Ciliophora; Phylum Microspora <b>Strategies for diagnosis of parasitic infection</b><br><b>Collection and transport of specimens for enteric pathogens.</b> Factors interfering for all types of stool collection<br><b>Precaution in the procedure of collection of specimens</b> | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 3 | 2T + 4 | Student understanding of the topic | <b>Amoeba Entamoeba Histolytica;</b> History and Distribution; Morphology; Life cycle; Pathogenesis and Clinical Features; Extraintestinal Amoebiasis; Laboratory Diagnosis; Immunity; Treatment;<br><b>Examination of stool sample</b><br>a) Macroscopic examination of stool<br>b) Microscopic examination of wet mounts                                                                                                                     | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 4 | 2T + 4 | Student understanding of the topic | Nonpathogenic Intestinal Amoeba<br>Entamoeba Coli; Entamoeba Hartmanni; Entamoeba Gingivalis; Endolimax Nana; Iodamoeba Buetschlii<br>Preparation of solutions for wet mount; the advantages and disadvantages of each solution:<br>* Saline solution<br>* Iodine solutions<br>* Eosin solution                                                                                                                                                | Lectures and practical lessons<br>-Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 5 | 2T + 4 | Student understanding of the topic | <b>Pathogenic Free-Living Amoebae</b><br><b>Naegleria Fowleri;</b> History and Distribution; Morphology; Life Cycle;                                                                                                                                                                                                                                                                                                                           | Lectures and practical lessons<br>-Discussion                  | Theory exams<br>- practical<br>- Discussions |



|     |        |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                  |                                                             |
|-----|--------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------|
|     |        |                                    | <p>Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment;</p> <p><b>Acanthamoeba Species</b>; Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Treatment</p> <p>P: Differentiation of pathogenic <i>Entamoeba histolytica</i> and the morphologically identical nonpathogenic <i>Entamoeba dispar</i> using immunological assays</p> <p>Preparation of preservatives and fixatives for mounted slides</p> <ul style="list-style-type: none"> <li>* Formalin solution (5-7%)</li> <li>* Polyvinyl alcohol as fixative</li> <li>* Schaudinn's fixative</li> </ul>                                                                                                                                                                                                                                                                      | Brainstorming                                                                    |                                                             |
| 7-6 | 4T + 8 | Student understanding of the topic | <p><b>Intestinal; oral and Genital Flagellates</b></p> <p><b>Giardia Lamblia</b>; History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis; <b>Trichomonas Vaginalis</b>; History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis;</p> <p><b>Laboratory diagnosis of enteric protozoa</b></p> <ul style="list-style-type: none"> <li>* The routine methods used in laboratory diagnosis</li> </ul> <p><b>Application of immunological methods in the diagnosis of parasite in general</b></p> <ul style="list-style-type: none"> <li>* Detection of antibodies in serum of patients with enteric protozoa (ELISA)</li> <li>* Detection of antigens in stool specimen of patients with enteric protozoa (ELISA)</li> </ul> | <p>- Lectures and practical lessons</p> <p>- Discussion</p> <p>Brainstorming</p> | <p>Theory exams</p> <p>- practical</p> <p>- Discussions</p> |
| 8   | 2T + 4 | Student understanding of the topic | <p>Tissue flagellates e.g Genus <i>Trypanosoma</i></p> <p>Laboratory diagnosis; routine methods, immunological Assays and molecular assays</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Lectures and practical lessons</p> <p>- Discussion</p> <p>Brainstorming</p>   | <p>Theory exams</p> <p>- practical</p> <p>- Discussions</p> |
| 9   | 2T + 4 | Student understanding of the topic | <p>Genus <i>Leishmania</i></p> <p>Properties of ideal vaccines. <i>leishmania</i> Vaccine in trail</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Lectures and practical lessons</p> <p>- Discussion</p> <p>Brainstorming</p>   | <p>Theory exams</p> <p>- practical</p> <p>- Discussions</p> |
| 10  | 2T + 4 | Student understanding of the topic | <p>Phylum Apicomplexa; Main properties of the group, ultrastructure of the apical complex</p> <p>First term examination</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Lectures and practical lessons</p> <p>- Discussion</p>                        | <p>Theory exams</p> <p>- practical</p> <p>- Discussions</p> |

|    |          |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                 |                                              |
|----|----------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------|
|    |          |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Brainstorming                                                   |                                              |
| 11 | 2T + 4   | Student understanding of the topic | Intestinal coccidian e.g. <i>Cryptosporidium parvum</i><br><br>Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis with special emphasis on Ziehl-Neelsen technique                                                                                                                                                                                                                                                                                                                                                                          | Lectures and practical lessons<br>- Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 12 | 2T + 4   | Student understanding of the topic | Extra-intestinal coccidian e.g. <i>Toxoplasma gondii</i> Brief lecture on morphology, habitat, modes of infection, infective stages, life cycle<br><br>Methods of laboratory diagnosis includes:<br>Direct detection of the parasite; Serological methods & Molecular assays Genus <i>Plasmodium</i> ; Terms used in malaria & Life cycle<br><br>Methods of laboratory diagnosis include:<br>- Preparation and detection of parasite in thick and thin blood Smears<br>- Preparation of Giemsa and leishman stains<br>- Quantitative Buffy Coat (QBC) test<br>- Non microscopic test | Lectures and practical lessons<br>- Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 13 | 2T + 4 F | Student understanding of the topic | <b>ISOSPORA BELLI</b><br>Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lectures and practical lessons<br>- Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 14 | 2T + 4 F | Student understanding of the topic | <b>Cyclospora Cayetanensis</b><br>Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lectures and practical lessons<br>- Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |
| 15 | 2T + 4 F | Student understanding of the topic | <b>Sarcocystis hominis</b><br>Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Lectures and practical lessons<br>- Discussion<br>Brainstorming | Theory exams<br>- practical<br>- Discussions |

#### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Zeibig, Elizabeth. *Clinical parasitology: practical approach*. Elsevier Health Scien 2012.



|                                                                       |                                                                                                            |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Main references (sources)                                             | Helminthology ,D.D MORO Aladun<br>2020                                                                     |
| Recommended books and references<br>(scientific journals, reports...) | 1- NCBI<br>2- PubMed<br>You tube                                                                           |
| Electronic References, Websites                                       | Gillespie, Stephen H., and Peter M. Hawkey, eds. <i>Medical parasitology: a practical approach</i> . 1995. |



## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Course name:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                    |
| Blood Transfusion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                    |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                    |
| Atu_chmML415                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                    |
| Semester/year 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                    |
| The date this description was prepared is 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                    |
| Available forms of attendance: morning/evening                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                    |
| Number of study hours (total)/number of units (total/75 hours(                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                    |
| 4 units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |
| Course administrator's name (mention all, if more than one name)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                    |
| Assist.lecturer, Sarah ali hameed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                    |
| Course objectives .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                    |
| <ul style="list-style-type: none"> <li>• - Definition of blood transfusion</li> <li>• 1-The student must master the process of drawing blood</li> <li>• 2-The student should know the blood types</li> <li>• 3- To learn some laboratory tests related to blood transfusion</li> <li>4- To understand how to compare the results he obtains with natural ratios</li> <li>• Trying to differentiate between scientific studies and social factors aking into account private and confidential dealing with patient cases and taking into account ethical values</li> </ul> | <ul style="list-style-type: none"> <li>• Objectives of the study subject</li> </ul> <p>Knowledge</p> <p>Skills</p> |
| Teaching and learning strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                    |
| Lectures and practical lessons - outcome-based learning - learning project-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                    |



based learning - group work-based learning - problem-based learning - community-based learning - self-learning.

| Course structure                           |                                                   |                                              |                                              |       |      |
|--------------------------------------------|---------------------------------------------------|----------------------------------------------|----------------------------------------------|-------|------|
| Evaluation method                          | Learning method                                   | Name of the unit or topic                    | Required learning outcomes                   | HOURS | WEEK |
| Theoretical and practical exam discussions | Introduction to Blood banking                     | Introduction to Blood banking                | Introduction to blood banking                | 2T+3P | 1    |
| Theoretical and practical exam discussions | Blood donation & selection of donation            | Blood donation & selection of donation       | Blood donation selection of donation         | 2T+3P | 3    |
| Theoretical and practical exam discussions | Lab. Test for donated blood                       | Lab. Test for donated blood                  | Lab. Test for donated blood                  | 2T+3P | 5    |
| Theoretical and practical exam discussions | Human blood groups                                | The human blood groups                       | The human blood groups                       | 2T+3P | 7    |
| Theoretical and practical exam discussions | Rh systems                                        | Rh systems                                   | Rh systems                                   | 2T+3P | 9    |
| Theoretical and practical exam discussions | Hemolytic disease of newborn                      | Hemolytic disease of newborn                 | Hemolytic disease of newborn                 | 2T+3P | 11   |
| Theoretical and practical exam discussions | Complication of blood transfusion                 | Complication of blood transfusion            | Complication of blood transfusion            | 2T+3P | 13   |
| Theoretical and practical exam discussions | Transmission of disease by blood transfusion      | Transmission of disease by blood transfusion | Transmission of disease by blood transfusion | 2T+3P | 15   |
|                                            |                                                   | Second academic semester                     |                                              |       |      |
| Theoretical and practical exam discussions | practical lessons<br>Discussion-<br>Brainstorming | Coagulating disorders                        | Coagulating disorders                        | 2T+3P | 1    |
| Theoretical and practical exam             | practical lessons                                 | Tests of haemostatic function                | Tests of                                     | 2T+3P | 2    |



|                                                  |                                                        |                                   |                                                  |       |   |
|--------------------------------------------------|--------------------------------------------------------|-----------------------------------|--------------------------------------------------|-------|---|
| discussions                                      | Discussion-<br>Brainstorming -                         |                                   | haemos<br>tatic<br>functio<br>n                  |       |   |
| Theoretical and<br>practical exam<br>discussions | practical<br>lessons<br>Discussion-<br>Brainstorming - | Acquired coagulation<br>disorders | Acquire<br>d<br>coagula<br>tion<br>disorder<br>s | 2T+3P | 3 |
| Theoretical and<br>practical exam<br>discussions | practical<br>lessons<br>Discussion-<br>Brainstorming - | Autosomal dominant<br>inheritance | Autoso<br>mal<br>domina<br>nt<br>inherita<br>nce | 2T+3P | 4 |
| Theoretical and<br>practical exam<br>discussions | practical<br>lessons<br>Discussion-<br>Brainstorming - | Autosomal dominant<br>inheritance | Autoso<br>mal<br>domina<br>nt<br>inherita<br>nce | 2T+3P | 5 |
| Theoretical and<br>practical exam<br>discussions | practical<br>lessons<br>Discussion-<br>Brainstorming - | Coombes test                      | Coomb<br>es test                                 | 2T+3P | 6 |

#### Course evaluation .

(Pursuit score 40 (20 theoretical exam marks + 5 activity marks + 15 practical exam marks

(Final exam score: 60 (35 theoretical exam + 25 practical exam

#### Learning and teaching resources

|                          |                                               |
|--------------------------|-----------------------------------------------|
| Lectures - presentations | (Required textbooks (methodology, if any      |
| Elsevier journal         | Recommended supporting books and              |
| Nature journal           | ( ...references (scientific journals, reports |
|                          | Electronic references, Internet sites         |



### Course Description Template

|                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- Course Name: <b>Histopathology</b>                                                           |                                                                                                                                                                                                                                                                                                                                                                                                |
| 2- Course Code: <b>Atu_chmML416</b>                                                             |                                                                                                                                                                                                                                                                                                                                                                                                |
| 3 .Academic year: 2024/2025 (fourth year)                                                       |                                                                                                                                                                                                                                                                                                                                                                                                |
| 4-Date of Preparing this Description: <b>18/8/2025</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                                |
| 5-Available Modes of Attendance: <b>Classroom + Lab</b>                                         |                                                                                                                                                                                                                                                                                                                                                                                                |
| 6-Total Study Hours / Total Units:5. Number of study hours (2 hours), number of units (5 units) |                                                                                                                                                                                                                                                                                                                                                                                                |
| 7-Course Coordinator(s)                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                |
| Name :Abbas Hussein Obaid<br>Email:abbas.obaid@atu.edu.iq                                       |                                                                                                                                                                                                                                                                                                                                                                                                |
| 8-Course Objectives                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                |
| General Objectives of the Course:                                                               | <b>Cognitive Objectives:</b><br>-1- Giving the student a broad and modern idea about pathology.<br><b>Program-Specific Skill Objectives:</b><br>- Establishing a good information base on pathology and modern techniques to enable the student to keep up with the medical community he will live with after graduation in hospitals.                                                         |
| 9-Teaching and Learning Strategies Strategy:                                                    |                                                                                                                                                                                                                                                                                                                                                                                                |
| Strategy                                                                                        | strategic:<br><br>Lectures for delivering theoretical concepts.<br>Laboratory sessions for practical applications.<br>Group discussions to enhance critical thinking.<br>Problem-based learning to connect theory with practice.<br>Case studies for applied learning.<br>Assignments and short projects to promote independent learning.<br>Methods of Assessment:<br>Quizzes<br>Midterm exam |



|                                        |       |                                                 |            |                                | Final exam<br>Laboratory reports . |
|----------------------------------------|-------|-------------------------------------------------|------------|--------------------------------|------------------------------------|
| 10- Course Structure<br>First Semester |       |                                                 |            |                                |                                    |
| Week                                   | Hours | Intended Learning Outcomes                      | Unit/Topic | Teaching Method                | Assessment Method                  |
| 1                                      | 2     | <b>Introduction</b>                             | 2          | In classrooms and laboratories | Quizzes                            |
| 2                                      | 2     | Lung (atelectasias, acute lung injury)          | 2          | In classrooms and laboratories | Quizzes                            |
| 3                                      | 2     | Lung (chronic bronchitis pulmonary embolism)    | 2          | In classrooms and laboratories | Quizzes                            |
| 4                                      | 2     | Lung tumors                                     | 2          | In classrooms and laboratories | Quizzes                            |
| 5                                      | 2     | Kidney (glomerular disease, nephrotic syndrome) | 2          | In classrooms and laboratories | Quizzes                            |
| 6                                      | 2     | IgA nephropathy (Berger disease)                | 2          | In classrooms and laboratories | Quizzes                            |
| 7                                      | 2     | Kidney tumors                                   | 2          | In classrooms and laboratories | Quizzes                            |



| 8               | 2     | Cancer of the oral cavity and tongue      | 2          | In classrooms and laboratories | Quizzes           |
|-----------------|-------|-------------------------------------------|------------|--------------------------------|-------------------|
| 9               | 2     | Esophagus (lacivation, varices)           | 2          | In classrooms and laboratories | Quizzes           |
| 10              | 2     | Stomach (gastritis, ulcer)                | 2          | In classrooms and laboratories | Quizzes           |
| 11              | 2     | Stomach (carcinoma)                       | 2          | In classrooms and laboratories | Quizzes           |
| 12              | 2     | Large intestines (malabsorption syndrome) | 2          | In classrooms and laboratories | Quizzes           |
| 13              | 2     | Crohn disease and hemorrhoids             | 2          | In classrooms and laboratories | Quizzes           |
| 14              | 2     | Large intestines tumors                   | 2          | In classrooms and laboratories | Quizzes           |
| 15              | 2     | Hepatic tumors, cirrhosis,                | 2          | In classrooms and laboratories | Quizzes           |
| Second Semester |       |                                           |            |                                |                   |
| Week            | Hours | Intended Learning Outcomes                | Unit/Topic | Teaching Method                | Assessment Method |
| 1               | 2     | Gall bladder (cholecystitis, tumors)      | 2          | In classrooms and laboratories | Quizzes           |
| 2               | 2     | (pancreatitis,                            | 2          | In classrooms                  | Quizzes           |



|    |   |                                                                       |   |                                         |         |
|----|---|-----------------------------------------------------------------------|---|-----------------------------------------|---------|
|    |   | neoplasma )                                                           |   | and<br>laboratories                     |         |
| 3  | 2 | (testicular atrophy,<br>lesions, neoplasma)                           | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 4  | 2 | Prostatic tumors                                                      | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 5  | 2 | cervicitis, tumor of<br>the cervix,<br>endometritis,<br>endometriosis | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 6  | 2 | tumor of the uterus                                                   | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 7  | 2 | fibrocystic changes,<br>tumors of the breast                          | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 8  | 2 | (hyperpituitarism and<br>pituitary adenoma                            | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 9  | 2 | thyroiditis, thyroid<br>neoplasma                                     | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 10 | 2 | Bone tumors                                                           | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 11 | 2 | acute eczematous<br>dermatitis, psoriasis                             | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 12 | 2 | Skin tumors                                                           | 2 | In<br>classrooms<br>and<br>laboratories | Quizzes |
| 13 | 2 | brain tumor                                                           | 2 | In                                      | Quizzes |



|                                                                                                |   |                                           |                                                                                                                                                                                                                                                                                                       |                                |         |
|------------------------------------------------------------------------------------------------|---|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------|
|                                                                                                |   |                                           |                                                                                                                                                                                                                                                                                                       | classrooms and laboratories    |         |
| 14                                                                                             | 2 | diseases of the peripheral nervous system | 2                                                                                                                                                                                                                                                                                                     | In classrooms and laboratories | Quizzes |
| 15                                                                                             | 2 | <b>Exam</b>                               | 2                                                                                                                                                                                                                                                                                                     | In classrooms and laboratories | Quizzes |
| <b>11-Course Evaluation</b>                                                                    |   |                                           |                                                                                                                                                                                                                                                                                                       |                                |         |
| The semester grade (100) is distributed as follows: %40 effort + 35 theoretical + 25 practical |   |                                           |                                                                                                                                                                                                                                                                                                       |                                |         |
| <b>12-Learning and Teaching Resources</b>                                                      |   |                                           |                                                                                                                                                                                                                                                                                                       |                                |         |
| Required Textbooks (if available)                                                              |   |                                           |                                                                                                                                                                                                                                                                                                       |                                |         |
| Main References (sources)                                                                      |   |                                           | <b>Robbins BASIC PATHOLOGY, 10<sup>th</sup> edition,</b><br><b>Robbins and Cotran Atlas of Pathology, 3<sup>th</sup> edition,</b><br><b>Pathology illustrated, 17<sup>th</sup> edition, 2011.</b>                                                                                                     |                                |         |
| Recommended Supplementary References (scientific journals, reports, etc.)                      |   |                                           | Non                                                                                                                                                                                                                                                                                                   |                                |         |
| Electronic References, Internet Sources                                                        |   |                                           | Non                                                                                                                                                                                                                                                                                                   |                                |         |
| Curriculum Development Plan                                                                    |   |                                           | <ul style="list-style-type: none"> <li>□ Enhance laboratory sessions with additional practical activities.</li> <li>□ Encourage student presentations and mini-research projects.</li> <li>□ Diversify assessment tools to include practical, theoretical, and research-based evaluations.</li> </ul> |                                |         |



## Course Description

|                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course name:                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Laboratory management                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2. Course code:                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Atu_chmML417                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3. Semester:                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Year: Fourth annual/ 2024-2025                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4. Description Date of preparation:                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1-9-2024                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 5. Available attendance forms:                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <ul style="list-style-type: none"> <li>- In-person (student attendance in classrooms)</li> <li>- Asynchronous (online)</li> <li>- Lectures or educational materials (files, videos) are available to the student at any time.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 6. Number of credit hours (total) / Number of units (total)                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 15Hour // One unit                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 7. Name of course supervisor (list everyone, if there is more than one name)                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| millimeter.Enas Kazim Abdul Amir                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Email:enas.kazim.chm@atu.edu.iq                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 8- Course objectives                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| GoalsThe decision                                                                                                                                                                                                                        | <p><b>First: Cognitive objective</b></p> <ol style="list-style-type: none"> <li>1- Demonstrate leadership skills in medical laboratory management</li> <li>2- Introducing the student to the special methods for managing laboratories properly</li> <li>3- Introducing the student to the types of laboratories and the duties of the laboratory manager</li> <li>4- ATo learn about modern methods of laboratory management</li> <li>5- The importance of scientific research ethics and its impact on the quality and reliability of results.</li> </ol> <p><b>Second: Skill-based objectivesAnd:</b></p> <ul style="list-style-type: none"> <li>- The student organizes laboratory tools and equipment in a way that facilitates access and use.</li> <li>- The student shall prepare laboratory records and inventories accurately and professionally.</li> <li>- The student must apply occupational safety procedures inside the laboratory.</li> <li>- The student shall calibrate laboratory equipment according to standard instructions.</li> <li>- The student should handle chemicals and waste in a correct and safe manner.</li> <li>- The student plans the laboratory schedule and tasks efficiently.</li> </ul> |



|                                     | <div></div> <ul style="list-style-type: none"><li>- The student should conduct a periodic inventory of laboratory supplies and track inventory.</li><li>- The student shall prepare periodic laboratory performance reports.</li></ul> |                                      |                                                                                                                                                                                                                               |                                                                                                        |                                                                                                                                                  |
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| 9- Teaching and learning strategies |                                                                                                                                                                                                                                                                                                                           |                                      |                                                                                                                                                                                                                               |                                                                                                        |                                                                                                                                                  |
| Strategy                            | <ul style="list-style-type: none"><li>- painPresents</li><li>- Outcome-based learning</li><li>- Project-based learning</li><li>- Learning based on teamwork</li><li>- Problem-based learning</li><li>- Community-based learning - Self-directed learning</li></ul>                                                        |                                      |                                                                                                                                                                                                                               |                                                                                                        |                                                                                                                                                  |
| 10- Course structure                |                                                                                                                                                                                                                                                                                                                           |                                      |                                                                                                                                                                                                                               |                                                                                                        |                                                                                                                                                  |
| week                                | watches                                                                                                                                                                                                                                                                                                                   | Required learning outcomes           | Name of unit or topic                                                                                                                                                                                                         | Learning method                                                                                        | Evaluation method                                                                                                                                |
| First week                          | 1                                                                                                                                                                                                                                                                                                                         | Student's understanding of the topic | <ul style="list-style-type: none"><li>- Laboratory Buildings</li><li>General Design</li><li>Objective Laboratory</li><li>Type and Classification</li></ul>                                                                    | <ul style="list-style-type: none"><li>-Lectures</li><li>- discussion</li><li>- Brainstorming</li></ul> | <ul style="list-style-type: none"><li>- Exams</li><li>Daily</li><li>- Reports</li><li>- Exams</li><li>Editorial</li><li>- Discussion s</li></ul> |
| Second week                         | 1                                                                                                                                                                                                                                                                                                                         | Student's understanding of the topic | <ul style="list-style-type: none"><li>- The role of the laboratory in diagnosing and controlling infection</li></ul>                                                                                                          | <ul style="list-style-type: none"><li>Lectures</li><li>- discussion</li><li>- Brainstorming</li></ul>  | <ul style="list-style-type: none"><li>- Exams</li><li>Daily</li><li>- Reports</li><li>- Exams</li><li>Editorial</li><li>- Discussion s</li></ul> |
| The third week                      | 1                                                                                                                                                                                                                                                                                                                         | Student's understanding of the topic | <ul style="list-style-type: none"><li>Definition of laboratory management</li><li>- Who are the managers in the health laboratory?</li><li>- Management level: planning, organizing, managerial leadership, control</li></ul> | <ul style="list-style-type: none"><li>-Lectures</li><li>- discussion</li><li>- Brainstorming</li></ul> | <ul style="list-style-type: none"><li>- Exams</li><li>Daily</li><li>- Reports</li><li>- Exams</li><li>Editorial</li><li>- Discussion s</li></ul> |
| Week 4                              | 1                                                                                                                                                                                                                                                                                                                         | Student's understanding of the topic | <ul style="list-style-type: none"><li>- Mission of Health Laboratory Services</li><li>The laboratory contributes to patient care and community health.</li><li>- The laboratory contributes to public</li></ul>               | <ul style="list-style-type: none"><li>-Lectures</li><li>- discussion</li><li>- Brainstorming</li></ul> | <ul style="list-style-type: none"><li>- Exams</li><li>Daily</li><li>- Reports</li><li>- Exams</li><li>Editorial</li><li>- Discussion s</li></ul> |



|                      |   |                                      |                                                                                                                                                                                       |                                              |                                                                            |
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|                      |   |                                      | health services in the community.                                                                                                                                                     |                                              |                                                                            |
| The acclimated Fifth | 1 | Student's understanding of the topic | Planning - Definition - Planning Function - Strategic Planning - Setting Priorities - Methods of Determining Goal and Purpose                                                         | -Lectures<br>- discussion<br>- Brainstorming | Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>- Discussion<br>s   |
| Week 6               | 1 | Student's understanding of the topic | Organization - Definition - Structural organization - Organization process - Supervisory organization - Organizational charts                                                         | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>- Discussion<br>s |
| Week 7               | 1 | Student's understanding of the topic | Definition of output<br>- Direction and people<br>- Motivating employees<br>- A practical approach to enhancing motivation in health laboratories in the Eastern Mediterranean region | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>- Discussion<br>s |
| Week 8               | 1 | Student's understanding of the topic | Leadership - Definition<br>- Leadership Style - Useful Characteristics of Effective Leadership                                                                                        | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>- Discussion<br>s |
| Weeks 9 and 10       | 1 | Student's understanding of the topic | Control<br>- identification<br>- Pre-analytical control<br>- Biological sources of variation in sample collection, transport, and storage                                             | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>- Discussion<br>s |
| Week 11              | 1 | Student's understanding of the topic | Laboratory communication with management<br>- Contact the disease surveillance program<br>- Laboratory communication with doctors                                                     | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>- Discussion<br>s |



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| Twelfth week    | 1 | Student's understanding of the topic | Data processing and data processing<br>- Patient's personal data<br>- Record keeping<br>- Outlier test | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>- Daily Reports<br>- Exams<br>- Editorial Discussions |
| thirteenth week | 1 | Student's understanding of the topic | Using computers to control laboratory performance                                                      | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>- Daily Reports<br>- Exams<br>- Editorial Discussions |
| Fourteenth week | 1 | Student's understanding of the topic | Preventive maintenance program for laboratory equipment<br>- very<br>- feature                         | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>- Daily Reports<br>- Exams<br>- Editorial Discussions |
| fifteenth week  | 1 |                                      | First theoretical exam                                                                                 |                                              |                                                                  |



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| <b>11. evaluationThe decision</b>                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily oral, monthly, or written exams, reports, etc. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>12 Learning and Teaching Resources</b>                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required textbooks (curriculum if available)</b>                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Main References (Sources)                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended books and references (scientific journals, reports...)                                                                                              | <i>Hutchison, Doug. Total Quality Management in Clinical Laboratories, American Society for Quality Press, Milwaukee, Wisconsin.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Electronic references and websites                                                                                                                              | 1. <a href="http://www.socscidiss.bham.ac.uk/">http://www.socscidiss.bham.ac.uk/</a><br>2. <a href="https://www.slideshare.net">https://www.slideshare.net</a> 1.<br><a href="http://www.socscidiss.bham.ac.uk/methodologies.html">http://www.socscidiss.bham.ac.uk/methodologies.html</a> 2.<br><a href="https://www.slideshare.net/collinsbrobey/sample-study">https://www.slideshare.net/collinsbrobey/sample-study</a>                                                                                                                                                                                                                                                                                                                   |
| <b>development planThe decision</b>                                                                                                                             | <ul style="list-style-type: none"> <li>• <b>Update scientific content:</b> <ul style="list-style-type: none"> <li>- Teaching methods through lectures, workshops, and laboratory simulations</li> <li>- continuous improvement</li> <li>- Sources and references</li> <li>- Evaluation strategy</li> </ul> </li> <li>• <b>Practical and applied training:</b> <ul style="list-style-type: none"> <li>- Laboratory Audit Simulation</li> <li>- Laboratory safety training</li> <li>- Budget and resource allocation</li> <li>- Case Study in Personal Management</li> <li>- Quality control exercise</li> <li>- Laboratory Information Management System Training</li> <li>- Playing the role of ethics and compliance</li> </ul> </li> </ul> |



## Course Description

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| <b>1. Course name:</b>                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Professional ethics                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>2. Course code:</b>                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Atu_chmML418                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>3. Semester:</b>                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Year: Fourth    annual/ 2024-2025                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>4. Description Date of preparation:</b>                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1-9-2024                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>5. Available attendance forms:</b>                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>- In-person (student attendance in classrooms)</li> <li>- Asynchronous (online)</li> <li>- Lectures or educational materials (files, videos) are available to the student at any time.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>6. Number of credit hours (total) / Number of units (total)</b>                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 30Hour // One unit                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>7. Name of the person in chargeThe decision(List everyone, if there is more than one name)</b>                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| millimeter.Enas Kazim Abdul Amir                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Email: <a href="mailto:enas.kazim.chm@atu.edu.iq">enas.kazim.chm@atu.edu.iq</a>                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>8- Course objectives</b>                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| GoalsThe decision                                                                                                                                                                                                                        | <p><b>First: Cognitive objective</b></p> <ul style="list-style-type: none"> <li>-Recognition on concept Ethics Professional And its importance in environment the job.</li> <li>- to understand foundations and principles Ethics that Control practices Professional.</li> <li>- Discrimination between behavior Professional healthy And other healthy.</li> <li>- Perception relationship between values character and values Professional.</li> <li>- Recognition on laws and systems Associated With ethics Professional.</li> <li>- to understand role Ethics in Strengthening trust and credibility in Institutions.</li> <li>- Comprehension antiquities Commitment or breach th Wi morals Professional on individual and society.</li> <li>- Recognition on Standards Integrity, Transparency, Justice, And responsibility Professional.</li> </ul> <p><b>Second: Skill-based objectivesAnd:</b></p> <ul style="list-style-type: none"> <li>- take decisions Professional Ethical.</li> <li>- solution problems Professional fairly and integrity.</li> </ul> |



|                                     | <div></div> <ul style="list-style-type: none"><li>- communication Transparently And respect.</li><li>- administration conflicts In a way balanced.</li><li>- analysis Positions Ethics And choose Most suitable.</li><li>- adjust self under pressures the job.</li><li>- the job In spirit team according to respect responsibility And</li></ul> |                                      |                                                                                                                                                                                                                                        |                                              |                                                              |
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| 9- Teaching and learning strategies |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |                                                                                                                                                                                                                                        |                                              |                                                              |
| Strategy                            | <ul style="list-style-type: none"><li>- painPresents</li><li>- Outcome-based learning</li><li>- Project-based learning</li><li>- Learning based on teamwork</li><li>- Problem-based learning</li><li>- Community-based learning - Self-directed learning</li></ul>                                                                                                                                                                    |                                      |                                                                                                                                                                                                                                        |                                              |                                                              |
| 10- Course structure                |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |                                                                                                                                                                                                                                        |                                              |                                                              |
| week                                | watches                                                                                                                                                                                                                                                                                                                                                                                                                               | Required learning outcomes           | Name of unit or topic                                                                                                                                                                                                                  | Learning method                              | Evaluation method                                            |
| First week                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                     | Student's understanding of the topic | Principles of professional ethics in the stages of civilizational .development<br>Principles of professional ethics in Arab and Islamic .civilization<br>with Etiquette of dealing patients in hospitals from .ancient times until now | -Lectures<br>- discussion<br>- Brainstorming | - Exams Daily<br>- Reports<br>- Exams Editorial Discussion s |
| Second week                         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                     | Student's understanding of the topic | : Professional behavior , concept, definition<br>and , applications practical<br>the relationship between employees and their supervisors                                                                                              | Lectures<br>- discussion<br>- Brainstorming  | - Exams Daily<br>- Reports<br>- Exams Editorial Discussion s |



|                       |   |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |                                                                                       |
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| The third week        | 1 | Student's understanding of the topic | <p>Basic skills of the unless profession</p> <ul style="list-style-type: none"> <li>- Characteristics of professional ethics as a guide and mentor for behavior.</li> <li>- How to employ professional ethics from the position of a guide to the individual's behavior, emotions, and ability to .Make the right decision</li> <li>Characteristics and characteristics of health workers... appearance, behavior, .Commitmentand...no</li> <li>- The patient's moral and legal rights.</li> </ul> | <p>-Lectures<br/>- discussion<br/>- Brainstorming</p> | <p>- Exams<br/>Daily<br/>- Reports<br/>- Exams<br/>Editorial<br/>Discussion<br/>s</p> |
| Week 4                | 1 | Student's understanding of the topic | <p>Behavioral noA</p> <ul style="list-style-type: none"> <li>- Humanitynoa/patterns</li> <li>.Collective- Interactive , nature, Its definition , interpretations, motives .and influencing factors</li> </ul>                                                                                                                                                                                                                                                                                      | <p>-Lectures<br/>- discussion<br/>- Brainstorming</p> | <p>- Exams<br/>Daily<br/>- Reports<br/>- Exams<br/>Editorial<br/>Discussion<br/>s</p> |
| The acel vomitedFifth | 1 | Student's understanding of the topic | <p>Communication Linguistic and /Styles</p> <p>Linguistic-Non</p> <ul style="list-style-type: none"> <li>- Definition, types,</li> </ul>                                                                                                                                                                                                                                                                                                                                                           | <p>-Lectures<br/>- discussion<br/>- Brainstorming</p> | <p>- Exams<br/>Daily<br/>- Reports<br/>- Exams<br/>Editorial<br/>Discussion<br/>s</p> |



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|                |   |                                      | effects, designing<br>successful<br>communication methods.                                                                                                                               |                                              |                                                                      |
| Week 6         | 1 | Student's understanding of the topic | Behavioral trends and<br>.tendencies<br>- Definition, classification,<br>factors affecting it,<br>methods of measuring it.                                                               | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>Discussions |
| Week 7         | 1 | Student's understanding of the topic | customs and , Values<br>.traditions<br>- Definition, classification,<br>factors affecting it,<br>methods of measuring it.                                                                | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>Discussions |
| Week 8         | 1 | Student's understanding of the topic | Personality types and<br>.how to deal with them<br>- Definition of personality<br>- its types - its<br>relationship to the<br>profession.<br>- Technician personality<br>and appearances | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>Discussions |
| Weeks 9 and 10 | 1 | Student's understanding of the topic | Conditions for improving<br>mental health<br>- Definition, factors<br>affecting it, prevention of<br>mental illness, role of<br>mental health in<br>preparation<br>.Professional         | -Lectures<br>- discussion<br>- Brainstorming | - Exams<br>Daily<br>- Reports<br>- Exams<br>Editorial<br>Discussions |



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| Week 11         | 1 | Student's understanding of the topic | Conditions of professional compatibility and the associated work relationship.<br>- Its concept, conditions, and professional unavailability.                                                                                    | -Lectures<br>- discussion<br>- Brainstorming | - Exams Daily<br>- Reports<br>- Exams Editorial<br>- Discussions |
| Twelfth week    | 1 | Student's understanding of the topic | Job description for graduate work                                                                                                                                                                                                | -Lectures<br>- discussion<br>- Brainstorming | - Exams Daily<br>- Reports<br>- Exams Editorial<br>- Discussions |
| thirteenth week | 1 | Student's understanding of the topic | Patient behavior<br>- Receiving the patient, dealing with him, gaining his trust, and maintaining professional secrets.<br>- Setting appointments for the required procedure requirements.<br>- Maintaining the patient's needs. | -Lectures<br>- discussion<br>- Brainstorming | - Exams Daily<br>- Reports<br>- Exams Editorial<br>- Discussions |
| Fourteenth week | 1 | Student's understanding of the topic | Professional Salary                                                                                                                                                                                                              | -Lectures<br>- discussion<br>- Brainstorming | - Exams Daily<br>- Reports<br>- Exams Editorial<br>- Discussions |
| fifteenth week  | 1 |                                      | First theoretical exam                                                                                                                                                                                                           |                                              |                                                                  |





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| <b>11. evaluationThe decision</b>                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily oral, monthly, or written exams, reports, etc. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>12 Learning and Teaching Resources</b>                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required textbooks (curriculum if available)</b>                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Main References (Sources)                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended books and references (scientific journals, reports...)                                                                                              | <i>Occupational safety</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Electronic references and websites                                                                                                                              | Youtube                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>development planThe decision</b>                                                                                                                             | <ul style="list-style-type: none"> <li>• <b>Update scientific content:</b> <ul style="list-style-type: none"> <li>- Teaching methods through lectures, workshops, and laboratory simulations</li> <li>- continuous improvement</li> <li>- Sources and references</li> <li>- Evaluation strategy</li> </ul> </li> <li>• <b>Practical and applied training:</b> <ul style="list-style-type: none"> <li>- Commitment and discipline</li> <li>- Honesty and integrity</li> <li>- Confidentiality and preservation of information</li> <li>- justice and neutrality</li> <li>- Respect and professional communication</li> </ul> </li> </ul> |