

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Clinical Immunology/1

1. Course Name :					
Clinical Immunology/1					
2. Course Code:					
MTML4102					
3. Semester / Year:					
Seven Semester / Fourth year (٤/٧)					
4. Description Preparation Date:					
2026/2025					
5. Available Attendance Forms:					
Attendance in the classroom					
6. Number of Credit Hours (Total) / Number of Units (Total):					
6 hours (theoretical + practical) / 4 units					
7. Course administrator's name (mention all, if more than one name)					
Name: dr. Hakeem Ghani Hassan Email: alhamamy201567@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : 1. .Introducing the student to clinical immunology, its uses, modern classifications, and some common diseases .The student will be able to define clinical immunology .٢ .identify the immune mechanism responsible for the pathogenesis of common immune diseases The student will .٣ .diseaseThe student will be able to distinguish between the various diagnostic methods and the important differential tests for each .٤					
9. Teaching and Learning Strategies					
Strategy		Based Learning-Lecture .١ (Based Learning (CBL-Case .٢ (Based Learning (PBL-Problem .٣ Based Learning-Laboratory .٤ Simulation & Virtual Labs .٥			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Clinical Immunology/1					
First	2	- Knowledge and understanding. - Practical skills.	Rheumatoid Arthritis	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Second	2	- Knowledge and understanding. - Practical skills.	Systemic Lupus Erythematosus	- Traditional lecture-based learning - Active learnin - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment

					4, Formative Assessment
Third	2	- Knowledge and understanding. - Practical skills.	Sjögren's Syndrome	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Fourth	2	- Knowledge and understanding. - Practical skills.	Ankylosing Spondylitis	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Fifth	2	- Knowledge and understanding. - Practical skills.	Behcet's Disease	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Sixth	2	- Knowledge and understanding. - Practical skills.	Psoriatic Arthritis	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Seventh	2	- Knowledge and understanding. - Practical skills.	Gluten sensitive Enteropathy	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Eighth	2	- Knowledge and understanding. - Practical skills.	Type A Gastritis (Pernicious Anemia) B Gastritis (Mucosa-associated lymphoid tissue lymphoma)	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Ninth	2	- Knowledge and understanding. - Practical skills.	Ulcerative Colitis Crohn's Disease	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Tenth	V	- Knowledge and understanding. - Practical skills.	Autoimmune Chronic Active hepatitis (AIH)	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Eleventh	2	- Knowledge and understanding. - Practical skills.	Primary Biliary Cirrhosis Primary Sclerosing Cholangitis	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Twelfth	2	- Knowledge and understanding. - Practical skills.	Serum Sickness Lupus Nephritis	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Thirteenth	2	- Knowledge and understanding. - Practical skills.	Post infection glomerulonephritis Membrano proliferative glomerulonephritis (MPGN) with cryoglobulinemia	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Fourteenth	2	- Knowledge and understanding. - Practical skills.	Membranous glomerulonephritis (Nephrotic Syndrome). .IgA-Nephropathy Henoch-Schonlein Purpura (HSP).	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Fifteenth	2	- Knowledge and understanding. - Practical skills.	.Wegener's granulomatosis .Microscopic polyangiitis .Churg-Strauss Vasculitis T Lymphocyte mediated Renal Injury/Tubulointerstitial nephritis(TIN)	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment

11. Course Evaluation

The following evaluation methods are adopted:

- 1- Written Exams
- 2- Practical Exams / Lab Tests
- 3- Oral Exams / Viva
- 4- Reports

Distribution of grades:

- %٥٠ Written tests -١
- %٣٠ Practical tests -٢
- %١٠ Oral assessment -٣
- %١٠ Reports -٤

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Abbas, A. K., Lichtman, A. H., & Pillai, S. (2024). Cellular and Molecular Immunology (10th ed.). Elsevier.
Main references (sources)	Delves, P. J., Martin, S., Burton, D., & Roitt, I. M. (2022). Roitt's Essential Immunology (14th ed.). Wiley-Blackwell
Recommended books and references (scientific journals, reports...)	Rich, R. R., Fleisher, T. A., Shearer, W. T., Schroeder, H. W., Weyand, C. M., & Fauci, A. S. (2023). Clinical Immunology: Principles and Practice (6th ed.). Elsevier.
Electronic References, Websites	WHO Immunization Resources (https://www.who.int/immunization) • CDC Immunization and Immune Disorders (https://www.cdc.gov/immunization) •

Academic description of Clinical Immunology/1 - 4th Stage

Signature :

Name :dr. Hakeem Ghani Hassan

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Blood transfusion

1. Course Name :	
Blood transfusion	
2. Course Code:	
MTML4105	
3. Semester / Year:	
Seventh semester / Fourth studied year	
4. Description Preparation Date:	
2025 - 2026	
5. Available Attendance Forms:	
Direct Theoretical and practical lectures	
6. Number of Credit Hours (Total) / Number of Units (Total):	
72 hours / Course (24 hour theoretical part+ 48 hour / week practical part).	
7. Course administrator's name (mention all, if more than one name)	
Name: Safaa Hussein Abdullah Email:Safaa.hussien@alayen.edu.iq	
8. Course Objectives	
Course Objectives :	The students able to : - Define the blood transfusion and their important. - Known the blood , their composition, and how we can preserve it. - Understand Mechanical and building of new blood cells. - Understanding the mechanism and structure of blood cells. - Identifying cases requiring blood transfusion or blood component transfusions. - Understanding and understanding blood type patterns and inheritance. - Studying some cases of blood transfusion complications. - Knowledge of tests specific to blood transfusions or blood component transfusions.
9. Teaching and Learning Strategies	

Strategy	1. Providing students with basic information to understand blood, its composition and components. 2. Providing students with theoretical, practical, and applied training in blood typing and cross-matching. 3. Applying topics covered in theoretical lectures to practical applications. 4. Conducting experiments to detect incorrect blood transfusions.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Blood transfusion					
1	2 hours theoretical	Understand lec.	Introduction of blood transfusion	Theoretical lec.	- Attend
2	2 hours theoretical	Remember lec.	Criteria of Donor Selection	Theoretical lec.	- Attend
3	2 hours theoretical	Analyze lec.	Services of Blood bank	Theoretical lec.	- Attend - Quiz
4	2 hours theoretical	Develop lec.	Screening Measures of Recipient Protection	Theoretical lec.	- Attend - Quiz
5	2 hours theoretical	Understand lec.	Blood groups and Rh blood group system	Theoretical lec.	- Attend - Quiz
6	2 hours theoretical	Clarify lec.	ABO Typing Discrepancies	Theoretical lec.	- Attend - Quiz
7	2 hours theoretical	Understand lec.	Types of Anticoagulants	Theoretical lec.	- Attend - Quiz
8	2 hours theoretical	Classify lec.	Anti-Human Globulins	Theoretical lec.	- Attend - Quiz
9	2 hours theoretical	Define lec.	Homeostasis and bleeding disorders	Theoretical lec.	- Attend - Quiz
10	2 hours theoretical	Understand lec.	Autologous Blood transfusion	Theoretical lec.	- Attend - Quiz
11	2 hours theoretical	Understand lec.	Acute and Delayed hemolytic reaction	Theoretical lec.	- Attend - Quiz
12	2 hours theoretical	Draw lec.	Hemolytic Anemia\Hemolytic disease of Newborn	Theoretical lec.	- Attend - Oral quiz
13	2 hours theoretical	Understand lec.	Complications of blood transfusion	Theoretical lec.	- Attend - Quiz
14	2 hours theoretical	Understand lec.	Lymph cytotoxicity cross match and Histocompatibility Testing	Theoretical lec.	- Attend
15	2 hours theoretical	Understand lec.	Laboratory tests for infectious diseases \ Comb's test	Theoretical lec.	- Attend - Quiz

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of practical part for Medical genetics 1					
1	2 hours practical	Understand lec.	Introduction to Blood banking \ Safety Procedures	- Practical Lec.	- Attend
2	2 hours practical	Remember lec.	Blood donation and selection of donors	- Practical Lec.	- Attend
3	2 hours practical	Analyze lec.	Blood grouping test	- Practical Lec. - Videos	- Attend - Discussion
4	2 hours practical	Develop lec.	Rh system test	- Practical Lec.	- Attend - Quiz
5	2 hours practical	Understand lec.	Cross matching and Agglutination reaction	- Practical Lec. - Videos	- Attend - Quiz
6	2 hours practical	Clarify lec.	Standard conditions for blood bags storage	- Practical Lec. - Videos	- Attend - Discussion
7	2 hours practical	Define lec.	Coomb's test	- Practical Lec.	- Attend - Quiz
8	2 hours practical	Define lec.	Types of anticoagulants \ coagulating disorders tests	- Practical Lec.	- Attend - Quiz
9	2 hours practical	Drew lec.	Blood components preparation	- Practical Lec.	- Attend - Quiz
10	2 hours practical	Understand lec.	Apheresis	- Practical Lec. - Videos	- Attend - Discussion
11	2 hours practical	Understand lec.	Anti-human globulin test	- Practical Lec.	- Attend - Quiz
12	2 hours practical	Understand lec.	Antibody reaction	- Practical Lec. - Videos	- Attend - Discussion
13	2 hours practical	Understand lec.	Hemolytic anemia testing	- Practical Lec. - Videos	- Attend - Quiz
14	2 hours practical	Understand lec.	Tests of hemostatic function	- Practical Lec. - Videos.	- Attend - Discussion -Experiment
15	2 hours practical	Read results	Platelets test	- Practical Lec. - Videos	- Attend - Discussion - Read results

11. Course Evaluation

The following evaluation methods are adopted:

- 1.Theoretical and practical quiz.
- 2.Attendance and discussion.
- 3.The experiments.

Distribution of grades:

1. Monthly examination for theoretical lectures (20 marks).
2. (5 marks) for activation and attendance.
3. Monthly examination for practical lectures (15 marks).
4. Total marks for Blood transfusion is (40 marks).
4. Final distribution examination marks as (35 marks) for theoretical and (25 marks) for practical, and the final marks for Blood transfusion is (100 marks).

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Harvey G. Klein (2014): Mollison's Blood Transfusion in clinical Medicine , 12 th edition.
Main references (sources)	. British Journal of "The History of Blood Ttansfusion" Haematology. 110 : 758–67. 2001. doi:10.1046/j.1365-2141.2000.02139.x. PMID 11054057
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.ncbi.nlm.nih.gov .

Academic description of Blood transfusion – Fourth stage

Signature :

Name : Safaa Hussein Abdullah

Al-Ayen Iraqi University

College of Health and Medical Technology

Course Description form for Clinical Enzymology

1. Course Name :

Clinical Enzymology

2. Course Code:

MTML4103

3. Semester / Year:

Seven Semester / Fourth year (१/४)

4. Description Preparation Date:

2025/2026

5. Available Attendance Forms:

Personal attendance

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

6 / 4

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

Name: Eyad Ali Othman

Email: dr.ieadothman@gmil.com

Eyad-othman@alayen.edu.iq

8. Course Objectives Introducing students to the basic principles of enzymes, their families, and their mode of action in clinical chemistry.

Course Objectives :

The students able to :

- Recall the basic principles of enzyme structure, classification, and nomenclature.
- Explain the various theories that explain the mechanism of enzyme action and the mechanisms by which they are regulated.
- Link enzyme dysfunction to the occurrence of certain diseases, and clarify their role in diagnosis and treatment.
- Compare the various mechanisms by which enzyme activity is regulated in terms of efficiency and speed.

9. Teaching and Learning Strategies

Strategy

- Gradual introduction of concepts: starting with the basics (synthesis, classification), then moving on to mechanisms (enzyme kinetics), and finally applications (medical, industrial).
- Integrating and linking theoretical and practical aspects: linking theoretical lectures with laboratory experiments.
- Using diverse teaching methods: using animations to explain mechanisms of action.
- Continuous assessment: Using exams to measure comprehension and relying on

lab reports to measure skills.

- Providing students with a comprehensive understanding that allows them apply their knowledge in research and applied fields.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for... Clinical Enzymology					
1	2	The student will be familiar with and understand the nature of the enzyme and its definition.	Definition of enzyme, chemical nature	1- The instructor prepares lecture notes for the lecture; both in paper and electronic format, and present them to the students. 2- The instructor delivers the lectures in detail. 3- The instructor requests reports and homework on the core vocabulary of the subject.	1- Multiple-choice questions. 2- Oral exam and live class questions. 3- Lab reports. 4- Midterm exam 5- Final exam
2	2	The student will be familiar with and understand the nature of the enzyme and its definition.	Definition of enzyme, chemical nature		
3	2	The student gains knowledge and understanding of the mechanism of enzyme action.	Mechanism of enzyme action: Lock and key model and induced fit theory		
4	2	The student gains knowledge and understanding of the mechanism of enzyme action.	Mechanism of enzyme action: Lock and key model and induced fit theory		
5	2	The student	Active site, Substrate binding		

		gains an understanding and knowledge of the active site, how the substrate binds, and how the enzyme is catalyzed from the catalytic sites.	site, Catalytic site		
6	2	The student gains an understanding and knowledge of the active site, how the substrate binds, and how the enzyme is catalyzed from the catalytic sites.	Active site, Substrate binding site, Catalytic site		
7	2	The student understands the classification of enzymes into major groups.	Classification with examples & Enzyme Specificity		
8	2	The student learns about the factors affecting enzyme activity.	Factors affecting enzyme activity		
9	2	The student learns what diseases can be diagnosed through the values of these enzymes.	ENZYMES OF CLINICAL SIGNIFICANCE Creatine Kinase, Lactate Dehydrogenase		
10	2	The student learns what diseases can be diagnosed through the values of these enzymes.	Alanine Aminotransferase, Acid Phosphatase		
11	2	The student	Glutamyltransferase,		

		learns what diseases can be diagnosed through the values of these enzymes.	Amylase, Lipase Glucose-6-Phosphate Dehydrogenase		
12	2	The student learns about the enzymes that metabolize drugs.	Drug-Metabolizing Enzymes		
13	2	The student acquires knowledge about the diagnostic importance of enzymes.	Diagnostic Enzymology (Clinical importance of enzymes)		
14	2	The student acquires knowledge about the diagnostic importance of enzymes.	Diagnostic Enzymology (Clinical importance of enzymes)		
15			Exam		
Syllabus of The Practical Course					
1	4	The student retrieves biochemistry information about enzymes.	Reviews Subject biochemistry of enzyme		
2	4	The student retrieves biochemistry information about enzymes.	Reviews Subject biochemistry of enzyme		
3	4	The student learns how to measure this enzyme and	Creatine Kinase test		

		its diagnostic significance.			
4	4	The student learns how to measure this enzyme and its diagnostic significance.	Lactate Dehydrogenase		
5	4	The student learns how to measure this enzyme and its diagnostic significance.	Alanine Aminotransferase, Aspartate Aminotransferase		
6	4	The student learns how to measure this enzyme and its diagnostic significance.	-Glutamyltransferase		
7	4	The student learns how to measure this enzyme and its diagnostic significance.	Alkaline phosphates		
8	4	The student learns how to measure this enzyme and its diagnostic significance.	Acidic phosphates		
9	4	The student learns how to measure this enzyme and its diagnostic significance.	Amylase		

10	4	The student learns how to measure this enzyme and its diagnostic significance.	Lipase		
11	4	The student learns about the diagnostic importance of enzymology.	Diagnostic Enzymology		
12	4	The student learns how to measure this enzyme and its diagnostic significance.	Glucose-6-Phosphate Dehydrogenase		
13	4	The student learns how to measure this enzyme and its diagnostic significance.	Drug-Metabolizing Enzymes		
14	4	The student learns how to measure this enzyme and its diagnostic significance.	Enzymes tumor marker		
15	4		Exam		

11. Course Evaluation

The following evaluation methods are adopted:

1. Exams
2. Quiz
3. Report
4. Attendance

5. Class Activity

6. Technical Practice

Distribution of grades:

1. Practical Midterm 15%

2. Theoretical Midterm 25%

3. Theoretical Final Term 35%

4. Practical Final Term 25%

Total 100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

-Clinical Chemistry: Techniques, Principles, Correlations: Michael L. Bishop, Edward P. Fody, Larry E. Schoeff

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

- Tietz Textbook of Clinical Chemistry and Molecular Diagnostics
Carl A. Burtis, Edward R. Ashwood, David E. Bruns

Electronic References, Websites

Academic description of Clinical Enzymology - Stage IV

Signature :

Name : dr.Eyad Ali Othman

1. Course Name:	
pathology	
2. Course Code:	
MTML4106	
3. Semester / Year:	
Seven Semester / Fourth year (٤/٧)	
4. Description Preparation Date:	
2025/2026	
5. Available Attendance Forms: Morning/evening	
Face to face	
6. Number of Credit Hours (Total): 15 hours / Number of Units (Total):4 units	
90 hrs (30 hrs theoretical+60 hrs practical)/ 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Moayad Jilab Abed	
Email: Moayadjilab@gmail.com	
8. Course Objectives	
Course Objectives	•A knowledge: -to teach the students histopathology theoretically & practically about definition of diseases, causes, types & characteristics histopathological changes & how to make the diagnosis. 3- to know the traditional & modern techniques to diagnose the disease (eg. (Tissue processing, immunohistochemistry & use of different dyes to reach the diagnosis). • C 2: Respecting religious traditions and social norms in biological studies
9. Teaching and Learning Strategies	
Strategy	A- teaching goals : 1-teach the medical basis of human diseases 2- teach the medical laboratories techniques 3- laboratory diagnosis of human diseases 4- Precautions & protection of lab. Hazards. 5- to prepare tools used for diagnosis. B- skills goals : 1- to work in medical laboratories & diagnose human diseases. 2- to prepare the basic laboratory materials needed for processing & diagnosis of cancer. 3- Techniques used for protection from laboratory hazards. 4- How to get lab. Materials from the markets.
1	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
١	1	Define pathology and understand its importance in modern diagnostics and its role in precision medicine.	The Role of Pathology in Precision-Medicine Era	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٢	1	Explain the concept of cellular degeneration, its types, causes, and microscopic features.	Degeneration	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٣	1	Identify the causes, symptoms, and histopathological changes in COPD and lung cancer.	Chronic Obstructive Pulmonary Diseases and Lung Cancer	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٤	1	Describe the types, causes, and tissue changes of GI inflammatory diseases.	Inflammatory Diseases of Gastrointestinal Tract	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٥	1	Differentiate between benign and malignant tumors of the GI tract and recognize their histological features.	Neoplastic Diseases of the Gastrointestinal Tract	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٦	1	Describe the microscopic and clinical features of cirrhosis, liver cancer, and gallbladder diseases.	Cirrhosis, Hepatocellular Carcinoma, and Gallbladder Diseases	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٧	1	Explain the pathogenesis of primary glomerular and tubulointerstitial renal diseases.	Primary Glomerulonephritis and Tubulointerstitial Diseases	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٨	1	Identify the inflammatory and neoplastic diseases of the endometrium, cervix, and placenta.	Diseases of Endometrium, Placenta, and Cervix	Lectures and Discussion Brainstorming	Theory exams- - Discussion
٩	1	Recognize benign and malignant breast tumors and their histopathological features.	Diseases of the Breast	Lectures and Discussion Brainstorming	Theory exams- - Discussion
١٠	1	Study of the disease of the Ovary and Fallopian Tube	Neoplastic and non neoplastic disease of the ovary	Lectures and Discussion Brainstorming	Theory exams- - Discussion
١١	1	Identify inflammatory and neoplastic diseases of the central nervous system	Meningitis and CNS tumors	Lectures and Discussion Brainstorming	Theory exams- - Discussion
١٢		Identify inflammatory and neoplastic diseases of the skin	Neoplastic and non neoplastic diseases of the skin	Lectures and Discussion	Theory exams- -

			of the skin	Brainstormi	Discussio
13	1	Identify inflammatory and neoplastic diseases of the Thyroid	Disease of the Thyroid	Lectures and Discussion Brainstormi	Theory exams- - Discussio
14	1	Identify inflammatory and neoplastic diseases of the oral cavity and salivary glands. - Recognize microscopic features.	Tumors of the soft tissue	Lectures and Discussion Brainstormi	Theory exams- - Discussio
15	1	Identify inflammatory and neoplastic diseases of the bone	Osteomyelitis and tumors of the bone	Lectures and Discussion Brainstormi	Theory exams- - Discussio

Syllabus of The Practical Course

1	1	describe the basic principles and workflow of surgical pathology, perform gross and microscopic tissue handling and preparation techniques and apply safety and ethical standards in diagnostic histopathology practice	Surgical pathology & techniques	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
2	1	Cytogenesis focuses on how cells are formed, grow, and develop into specialized types that build and maintain body tissues.	Cytogenesis	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
3	1	explain the principle and perform basic procedures of antigen–antibody detection using electrical methods, and interpret results for clinical diagnostic applications	Electroimmunoassay	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
4	1	explain the principles of enzyme histochemistry, apply specific histochemical reactions to demonstrate enzymatic activity in tissue sections, and analyze the diagnostic significance of enzyme distribution in pathological specimen	Enzyme histochemistry	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
5	1	explain the principles of immunohistochemistry, perform antibody-based staining techniques for antigen detection in tissue sections, and evaluate the diagnostic and research applications of IHC in pathology	Immunohistochemis	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
6	1	knowledge of cytopathological techniques, analyze cellular morphology to detect pathological	Cytopathology	practical lessons – Discussion	Practical exam – a Discussio

		changes, and apply cytological methods in disease diagnosis.		and Brainstormi	
7	1	understand the basic principles and applications of radioisotopes, handle radioactive materials safely, and interpret their use in medical diagnostics and laboratory techniques.	Radioisotopes	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
8	1	involves the growth of cells under controlled conditions to study cellular functions, develop medical treatments, and support research in genetics and biotechnology.	Tissue culture	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
9	1	study bone structure and composition, including histological, biochemical, and radiological methods for diagnosing bone diseases and assessing tissue integrity	Techniques for analyzing bone	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
10	1	focus on preserving and preparing biological specimens for teaching, research, and medical reference purposes.	Museum techniques	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
11	1	pathological study of nervous and muscular tissues, focusing on biopsy techniques, specimen handling, and microscopic evaluation for diagnosing neuromuscular disorders.	Neuropathology and muscle biopsy techniques	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
12	1	involve the collection and analysis of muscle tissue to identify structural, inflammatory, or metabolic abnormalities essential for diagnosing neuromuscular diseases.	Muscle biopsies	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
13	1	study of diseases at the molecular and genetic levels, using techniques such as PCR and DNA sequencing to detect mutations and understand disease mechanisms.	Molecular pathology	practical lessons – Discussion and Brainstormi	Practical exam – a Discussio
14	1	focus on the practical	Techniques in	practical	Practical

		methods used to detect and study genetic changes in tissues, applying molecular tools like PCR and sequencing for accurate disease diagnosis and research.	molecular pathology	lessons – Discussion and Brainstorming	exam – a Discussion
15	1	describe the basic principles and workflow of surgical pathology, perform gross and microscopic tissue handling and preparation techniques and apply safety and ethical standards in diagnostic histopathology practice	Surgical pathology & techniques	practical lessons – Discussion and Brainstorming	Practical exam – a Discussion

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 any)	Pathologic basis of diseases, 8th edition, 2012 - Junqueira's basic histology, 15th edition, 2018
Main references (sources)	- Pathology illustrated, 17th edition, 2011.
Recommended books and references (scientific journals, reports...)	1-NCBI 2- PubMed You tube
Electronic References, Websites	1-NCBI 2- PubMed

Academic description of **pathology** -4th..... Stage

Signature:

Name: Dr. Moayad Jilab Abed

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Research Methods

1. Course Name:					
Research Methods					
2. Course Code:					
MTML4108					
3. Semester / Year:					
Seven Semester / Fourth year (٤/٧)					
4. Description Preparation Date:					
2025/2026					
5. Available Attendance Forms:					
Morning and evening attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
One unit - 15 hours					
7. Course administrator's name (mention all, if more than one name)					
Name: Salam Hussein Ewaid			Email: salam.hussein@alayen.edu.iq		
8. Course Objectives					
Course Objectives: The students able to: - Teaching the student how to develop a plan for conducting scientific research - How to take samples and obtain approvals for conducting research - The student will understand the research sections and how to write the research					
9. Teaching and Learning Strategies					
Strategy	- Understand the nature, components, and benefits of scientific research. - Understand the parts of scientific research and how to conduct it. - Understand the practical steps of conducting scientific research. - Understand the steps of writing scientific research.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Research Methods					
1	\	Understand the lecture topic	Principles of research	PowerPoint lecture	Oral questions and quizzes
2	\		Scientific method		//

3	\	//	Designing the research plane	//	//
4	\	//	The research process	//	//
5	\	//	Classification of research	//	//
6	\	//	Fundamental research	//	//
7	\	//	Applied research and pilot study	//	//
8	\	//	Clinical trial research	//	//
9	\	//	Research problem formation	//	//
10	\	//	(Proposal writing (protocol)	//	//
11	\	//	How to write scientific research	//	//
12	\	//	Review of literature	//	//
13	\	//	Introduction and the aim of the study	//	//
14	\	//	Result and Discussion	//	//
15	\	//	Conclusion and recommendation	//	//

11. Course Evaluation

The following evaluation methods are adopted:

1. This is a dynamic class where students have to be prepared prior to each session to discuss intriguing topics of current interest in different areas.
2. So, being in class and participating actively in discussions are of great importance and highly recommended.
3. In fact, their grade is influenced by their attendance and participation.
4. On the other side, students must be ready any time to do drop quizzes and homework and thus to ensure success and progress in this course.

Distribution of grades:

(Monthly Exam: 40 marks (35 marks for the exam and 5 marks for the daily assessment)
Final Exam: 60 marks.

12. Learning and Teaching Resources

Required textbooks	
Main references (sources)	
Recommended books and references (journals, reports...)	

Academic description of Research Methods - 4th Stage

Signature:

Name: Prof. Salam Hussein Ewaid

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Diagnostic Bacteriology 1

1. Course Name :	
Diagnostic Bacteriology 1	
2. Course Code:	
MTML4102	
3. Semester / Year:	
7/4	
4. Description Preparation Date:	
2025/2026	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total):	
90/4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Asaad Abbas Jlood Email: Asaad.jlood@alayen.edu.iq	
8. Course Objectives	
Course Objectives : The students able to : - Provide students with the fundamental concepts of diagnostic bacteriology and its clinical applications. - Enable students to properly collect and transport clinical specimens. - Train students to culture, isolate, and identify pathogenic bacteria using conventional and modern methods. - Develop students' skills in interpreting microbiological results and correlating them with clinical findings. - Reinforce biosafety and infection control principles in the laboratory. - Introduce students to advanced molecular and immunological diagnostic techniques. - Prepare students for accurate and professional practice in clinical diagnostic laboratories.	
9. Teaching and Learning Strategies	
Strategy	- Interactive theoretical lectures using multimedia and audiovisual aids. - Practical laboratory sessions on bacterial cultivation, isolation, and identification. - Group discussions and case study analysis. - Problem-Based Learning (PBL) to promote critical thinking. - Laboratory notebooks and practical reports. - Educational videos and e-learning platforms. - Quizzes and in-class assignments.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Diagnostic Bacteriology 1					
1	6	Understand the concept and purpose of diagnostic microbiology and its role in clinical diagnosis	Diagnostic microbiology: purpose and philosophy Laboratory safety	Lecture + Discussion	Quiz + Class participation
2	6	Understand the concept and purpose of diagnostic microbiology and its role in clinical diagnosis	Diagnostic microbiology: purpose and philosophy Laboratory safety	Lecture + Discussion	Quiz + Class participation
3	6	Identify and apply correct specimen collection and transport procedures.	Selection, collection, and transport of specimens for microbiological examination	Practical session + Demonstration	Practical assessment + Report
4	6	Identify and apply correct specimen collection and transport procedures.	Selection, collection, and transport of specimens for microbiological examination	Practical session + Demonstration	Practical assessment + Report
5	6	Perform cultivation and isolation of viable pathogens using appropriate media	Cultivation and isolation of viable pathogen	Lab experiment + Group work	Lab exam + Logbook
6	6	Perform cultivation and isolation of viable pathogens using appropriate media	Cultivation and isolation of viable pathogen	Lab experiment + Group work+ lecture	Lab exam + Logbook
7	6	Apply microscopic, biochemical, and serological methods for bacterial identification	Microbiological methods for identification	Lab practice + Lecture	Practical + Written test
8	6	Understand molecular and immunological diagnostic techniques (PCR, ELISA)	Complementary diagnostic methods	Multimedia lecture + Discussion	Written exam + Report
9	6	Differentiate normal flora from opportunistic bacteria and explain their role in disease	Normal flora and other opportunistic bacteria	Lecture + Case study	Quiz + Oral discussion
10	6	Identify bacterial agents causing eye, ear, and sinus infections and their diagnosis	Infections of the Eyes, Ears and Sinuses	Clinical lecture + Case review	Exam + Report
11	6	Identify bacteria involved in skin and wound infection	Bacterial infections of skin, soft tissues and wounds	Lecture + Lab work	Practical + Continuous assessment
12	6	Explain bacterial infection mechanisms	Bacterial infections of skin Burn	Lecture Case presentation +	Oral + Practical test

		in burns and laboratory diagnosis		Discussion	
13	6	Recognize bacterial causes of respiratory infections and differential diagnosis	Diagnosis of bacterial respiratory tract infections (upper and lower R.T.)	Lecture + Practical session	Written + Practical exam
14	6	Recognize bacterial causes of respiratory infections and differential diagnosis	Diagnosis of bacterial respiratory tract infections (upper and lower R.T.)	Lecture + Practical session	Written + Practical exam
15	6	Evaluate theoretical and practical competencies	Exam	Review + Final exam	Final written & practical exam

11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes: To assess weekly comprehension.
2. Monthly and Oral Exams: To evaluate understanding and reasoning.
3. Practical Examinations: To assess laboratory performance and precision.
4. Reports and Assignments: To measure research and analytical skills.
5. Final Examination (Theoretical & Practical): To assess overall understanding of the course.

Distribution of grades:

1. Attendance and Participation – 5 marks
2. Daily and Oral Tests – 5 marks
3. Monthly and Written Exams – 20 marks
4. Laboratory Reports and Activities – 10 marks
5. Final Theoretical Exam – 40 marks
6. Final practical Exam – 20 marks

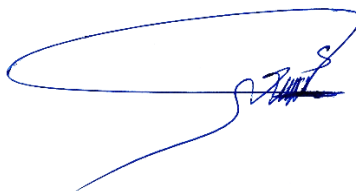
12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Forbes, B. A., Sahm, D. F., & Weissfeld, A. S. (2022). <i>Bailey & Scott's Diagnostic Microbiology</i> (15th ed.). Elsevier. • Carroll, K. C., Hobden, J. A., Miller, S., Morse, S. A., Mietzner, T. A., Detrick, B., Mitchell, T. G., & Zhang, Q. (2022). <i>Jawetz, Melnick & Adelberg's Medical Microbiology</i> (29th ed.). McGraw-Hill. • Carroll, K. C. et al. (2023). <i>Manual of Clinical Microbiology</i> (13th ed.). ASM Press
Main references (sources)	1. Koneman, E. W., Allen, S. D., Janda, W. M., Schreckenberger, P. C., & Winn, W. C. (2020). <i>Color Atlas and Textbook of Diagnostic Microbiology</i> (8th ed.). Lippincott Williams & Wilkins. 2. <i>Diagnostic Microbiology and Infectious Disease</i> – A peer-reviewed scientific journal providing updates in bacterial diagnostics and clinical correlation. 3. World Health Organization (WHO). <i>Laboratory</i>

	<i>Diagnosis of Bacterial Pathogens: Guidelines for Clinical Laboratories</i> , 2021.
Recommended books and references (scientific journals, reports...)	• Baron, E. J., & Fine gold, S. M. (2022). <i>Bailey & Scott's Short Course in Clinical Microbiology</i>. • ASM (2022). <i>Biosafety Guidelines for Microbiology Laboratories</i>. • Recommended scientific journals: • <i>Journal of Clinical Microbiology (JCM)</i> • <i>Clinical Infectious Diseases (CID)</i> • <i>The Lancet Microbe</i> • <i>Frontiers in Microbiology</i>
Electronic References, Websites	• World Health Organization (WHO): https://www.who.int • U.S. Centers for Disease Control and Prevention (CDC): https://www.cdc.gov/lab • American Society for Microbiology (ASM): https://asm.org • PubMed – National Library of Medicine: https://pubmed.ncbi.nlm.nih.gov • Microbiology Online: https://microbiologyonline.org • ScienceDirect – Microbiology Section: https://www.sciencedirect.com

Academic description of Diagnostic Bacteriology 1
Stage: Fourth

Signature:



Name: Dr. Asaad Abbas Jlood

1. Course Name:					
Diagnostic parasitology (1)					
2. Course Code:					
MTML4104					
3. Semester / Year:					
Seven Semester / Fourth year (٤/٧)					
4. Description Preparation Date:					
2025/2026					
5. Available Attendance Forms:					
Personal+hypothetical (on line)					
6. Number of Credit Hours (Total) / Number of Units (Total):					
4/3					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Murhaf Lahlah Email: murhaflahlah@gmail.com					
8. Course Objectives					
Course Objectives		1- Study the taxonomic forms of each genus of pathogenic parasites. 2- Study the laboratory diagnostic methods for each genus, including serological and molecular methods. 3- Study the medical and pathological importance of the genera prevalent in Iraq and the pathogenicity of each genus.			
9. Teaching and Learning Strategies					
Strategy		1-Providing laboratories, computer and technical equipment and materials necessary for learning 2- Providing electronic systems that allow students easy access to information 3- Using the learning platform 4- Providing all requirements for occupational health and safety in educational equipment and activities			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
	6	Training students to conduct		Laboratory and computer	Various quizzes and

		examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.		equipment	classroom activities
1			Recent classification of parasite * Systematic grouping of parasites* General terms used in parasitology Introduction; Parasites; Host; Zoonosis; Host-parasite Relationships 3 ; Life Cycle of Parasites; Sources of Infection; Modes of Infection; Pathogenesis; Immunity Infection ; Laboratory Diagnosis		
2			Protozoa General Features; Structure; Reproduction; Life Cycle; Classification of Protozoa; Phylum Sarcomastigophora; Phylum Apicomplexa; Phylum Ciliophora; Phylum Microspora Strategies for diagnosis of parasitic infection * Collection and transport of specimens for enteric pathogens * Factors interfering for all types of stool collection * Precaution in the procedure of collection of specimens		
3			Amoeba		

			Entamoeba Histolytica; History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Extraintestinal Amoebiasis; Laboratory Diagnosis; Immunity; Treatment; Examination of stool sample a) Macroscopic examination of stool b) Microscopic examination of wet mounts		
4			Nonpathogenic Intestinal Amoeba Entamoeba Coli; Entamoeba Hartmanni; Entamoeba Gingivalis; Endolimax Nana; Iodamoeba Buetschlii Preparation of solutions for wet mount; the advantages and disadvantages of each solution: * Saline solution * Iodine solutions * Eosin solution		
5			Pathogenic Free-Living Amoebae Naegleria Fowleri; History and Distribution; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Acanthamoeba Species; Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Treatment P: Differentiation of pathogenic <i>Entamoebahistolytica</i> and the morphologically identical non pathogenic <i>Entamoebadispar</i> using immunological assays Preparation of preservatives and fixatives for mounted slides * Formalin solution (5-7%) * PVA (Polyvinyle		

			alcohol) as fixative * Schaudinns fixative		
6-7			Intestinal; oral and Genital Flagellates Giardia Lamblia; History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis; Trichomonas Vaginalis; History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis; Laboratory diagnosis of enteric protozoa * The routine methods used in laboratory diagnosis Application of immunological methods in the diagnosis of parasite in general * Detection of antibodies in serum of patients with enteric protozoa (ELISA) * Detection of antigens in stool specimen of patients with enteric protozoa (ELISA)		
8			Tissue flagellates e.g Genus Trypanosoma Laboratory diagnosis; routine methods, immunological Assays and molecular assays		
9			Genus Leishmania Properties of ideal vaccines. leishmania Vaccine in trail		
10			Phylum Apicomlexa; Main properties of the group, ultrastructure of the apical comlex First term examination		
11			Intestinal coccidian e.g <i>Cryptosporidium parvum</i> Morphology, habitat, mod infection, infective		

			lifecycle and lab diagnosis with emphasis on Ziehl-Neelsen technique		
12			Extra-intestinal coccidian e.g. <i>Toxoplasma gondii</i> Brief lecture on morphology, habitat, modes of infection, infective stages, life cycle Methods of laboratory diagnosis includes: Direct detection of the parasite; Serological methods & Molecular assays Genus Plasmodium; Terms used in malaria & Life cycle Methods of laboratory diagnosis include: - Preparation and detection of parasite in thick and thin blood Smears Preparation of Geimsa and leishman stains Quantitative Buffy Coat (QBC) test Non microscopic test		
13			ISOSPORA BELLI Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis		
14			Cyclospora Cayetanensis Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis		
15			Sarcocystis hominis Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis		

11. Course Evaluation

The following evaluation methods are adopted:

1. the tasks assigned to the student such as daily preparation
2. dailyoral
3. monthly

4. written exams
5. reports...ect.
- 6.
- 7.

Distribution of grades:

Distributing the score out of 100 according to:

1. 20 St1
2. 20St2
3. 60 Final exam
- 4.
- 5.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Twinning decisions with Iraqi universities
Main references (sources)	1- Fadhel, Hussein and Birqadar, Marwan (2020): Medical and Veterinary Parasitology - Part One, University of Kirkuk, 529 pp. 2- Fadhel, Hussein and Birqadar, Marwan (2020): Medical and Veterinary Parasitology - Part Two, University of Kirkuk.
Recommended books and references (scientific journals, reports...)	Qatranji, Mohsen (2019): Microbiology (1) - Faculty of Pharmacy - Hama University - Syria.
Electronic References, Websites	Assif, et al., (2004): medical parasitology. Uni. Of Gondar www.google.com www.science direct.com

Academic description Diagnostic parasitology (1)- Fourth Stage

Signature :

Name :Ass. Prof. Murhaf Lahlah

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Professional Ethics

1. Course Name :					
Professional Ethics					
2. Course Code:					
MTML4107					
3. Semester / Year:					
Seventh semester/ Fourth stage (7/4)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
30 Hours/ 2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Mohamed Alwan			Email:		
8. Course Objectives					
Course Objectives : The course aims to introduce technical college students to professional ethics according to their technical specialization, and to equip them with professional ethical principles that enhance their commitment to them in their expected field of work after graduation.					
9. Teaching and Learning Strategies					
Strategy		- Explanation and clarification - Lecture method - Student groups - Educational presentations			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Professional Ethics					
1	٢	Understand the topic	Unit (1) – Ethics -The concept and origin of ethics.	Interactive-visual	Exams, Discussions
2	٢				

			•General principles of ethics. •Sources of ethics. •Moral values. •The importance of ethics for the individual and society.		
3	۲	Understand the topic	Unit (2) – Work and Profession -Work and its importance. •Work behaviors. •The concept of a profession. •Definition of a profession. •The difference between the concepts of work, profession, and craft. •The standards upon which a profession should be based.	Interactive-visual	Exams, Discussions
4	۲	Understand the topic	Unit (3) – Professional Ethics •The nature of professional ethics. •The positive outcomes of adhering to professional ethics. •Characteristics of work ethics. •Qualities of professional ethics. •Steps towards an acceptable level of professional ethics.	Interactive-visual	Exams, Discussions
5	۲	Understand the topic	Unit (4) – Values and Professional Ethics	Interactive-visual	Exams, Discussions
6	۲	Understand the topic	-Honesty. •Sincerity. •Giving sincere advice. •Justice. •Good conduct.	Interactive-visual	Exams, Discussions

			•Excellence in work.		
7	۲	Understand the topic	Unit (5) – Patterns of unethical behavior in the profession -Administrative Corruption. o Unethical Administrative Conduct. o Definition of Administrative Corruption. o Types of Administrative Corruption. •Bribery. o The Concept of Bribery. o Types of Bribery. o The Difference Between a Gift and a Bribe. o The Reasons and Motives Behind Bribery. Fraud. o The Concept of Fraud. o The Nature of Fraud in the Workplace. - Manifestations of Fraud in Job Performance.	Interactive-visual	Exams, Discussions
8	۲	Understand the topic		Interactive-visual	Exams, Discussions
9	۲	Understand the topic	Unit (6) – Means and methods of establishing professional ethics values - Methods for instilling professional ethics. •Levels of building and instilling professional ethics. •Means and methods for instilling professional ethics. •Considerations for drafting a professional	Interactive-visual	Exams, Discussions
10	۲	Understand the topic		Interactive-visual	Exams, Discussions

			code of ethics. •How ethical behavior at work is promoted according to Kritner and Kinneke.		
11	۲	Understand the topic	Unit (10) – Characteristics and Duties of a Medical Technician -The qualities a medical technician should possess. •The medical technician's duties towards their profession. •The medical technician's duties towards the patient. •The medical technician's duties towards the community.	Interactive-visual	Exams, Discussions
12	۲	Understand the topic	Unit (11) - Patient Rights •The concept of patient rights. •The importance of respecting patient rights. •Key patient rights. •How to obtain informed consent.	Interactive-visual	Exams, Discussions
13	۲	Understand the topic	Unit (12) - The relationship of the medical technician with society and his responsibility towards the environment and public safety •The importance of the medical technologist's role in society. •Areas in which the medical technologist can play an active role in society. •The concept of health	Interactive-visual	Exams, Discussions

			promotion. •The role of the medical technologist in health promotion.		
14	۲	Understand the topic	Unit (13) - Professional Relationships: The relationship of the medical technician with his colleagues in the health institution -The importance of professional relationships. •The most important pillars of healthy professional relationships.	Interactive-visual	Exams, Discussions
15	۲	Understand the topic	Unit (14) - Ethics in Medical Research, Education, and Patient Learning. •The importance of medical research. •Definition of the Helsinki Convention. •Main principles of the Code of Ethics for Conducting Health Research in Iraq. •Ethical conditions and guidelines for conducting animal experiments. •Unethical practices in writing medical research. •Main principles of patient learning ethics.	Interactive-visual	Exams, Discussions

11. Course Evaluation

The following evaluation methods are adopted:

1. Daily exam
2. Monthly exam
3. Final exam

4. Daily evaluation

Distribution of grades:

1. Monthly exam: 25 points
2. Daily evaluation/ Exam: 5 points
3. Final exam: 70 points

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

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

كتاب "أخلاقيات المهنة" للدكتور عبد العزيز التركستاني.

Electronic References, Websites

Academic description of Professional Ethics - Fourth Stage

Signature :

Name : Prof. Mohamed Alwan

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Clinical Immunology/2

1. Course Name :					
Clinical Immunology/2					
2. Course Code:					
MTML4202					
3. Semester / Year:					
(٤/8) Eight Semester / Fourth year					
4. Description Preparation Date:					
2026/2025					
5. Available Attendance Forms:					
Attendance in the classroom					
6. Number of Credit Hours (Total) / Number of Units (Total):					
6 hours (theoretical + practical) / 4 units					
7. Course administrator's name (mention all, if more than one name)					
Name: dr. Hakeem Ghani Hassan Email: alhamamy201567@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : 1. .Introducing the student to clinical immunology, its uses, modern classifications, and some common diseases .The student will be able to define clinical immunology .٢ .identify the immune mechanism responsible for the pathogenesis of common immune diseases The student will .٣ .diseaseThe student will be able to distinguish between the various diagnostic methods and the important differential tests for each .٤					
9. Teaching and Learning Strategies					
Strategy		Based Learning-Lecture .١ (Based Learning (CBL-Case .٢ (Based Learning (PBL-Problem .٣ Based Learning-Laboratory .٤ Simulation & Virtual Labs .٥			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Clinical Immunology/2					
First	2	- Knowledge and understanding. - Practical skills.	Hashimoto's Thyroiditis Graves' Disease	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4. Formative Assessment
Second	2	- Knowledge and understanding. - Practical skills.	Insulin-Dependent & Non-dependent Diabetes Mellitus Addison's Disease	- Traditional lecture-based learning - Active learnin - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment

					4, Formative Assessment
Third	2	- Knowledge and understanding. - Practical skills.	Hypersensitivity Diseases	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Fourth	2	- Knowledge and understanding. - Practical skills.	Asthma	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Fifth	2	- Knowledge and understanding. - Practical skills.	Allergic Rhinitis (AR).	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Sixth	2	- Knowledge and understanding. - Practical skills.	Atopic Dermatitis (AD)	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Seventh	2	- Knowledge and understanding. - Practical skills.	Contact Dermatitis	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Eighth	2	- Knowledge and understanding. - Practical skills.	Drug-induced Respiratory Diseases	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Ninth	2	- Knowledge and understanding. - Practical skills.	Eosinophilic Pneumonias	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Tenth	V	- Knowledge and understanding. - Practical skills.	Occupational & Environmental Lung Diseases	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Eleventh	2	- Knowledge and understanding. - Practical skills.	Tumor immunology: Oncogene and cancer induction, Tumor antigens, Immune response to tumors, relation between tumor type and nature of immune response; Angiogenesis and tumor metastasis; anti-tumor drug resistance; immunotherapy	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Twelfth	2	- Knowledge and understanding. - Practical skills.	Transplantation immunology, Immunotherapy and Regenerative medicine: Types, mechanism of transplant rejection, prevention of graft rejection. Antigen and antibodies in blood, concept of titer. Concept of blood groups and its principle (ABO group, Rh typing and MN group). Condition for blood transfusion. Basic principle followed for blood transfusion	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Thirteenth	2	- Knowledge and understanding. - Practical skills.	Blood Disorders 1. Autoimmune Hemolytic Anemia 2. Warm & Cold Agglutininemia Hodgkin & Non-lymphoma	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Fourteenth	2	- Knowledge and understanding. - Practical skills.	Acute & Chronic Leukemia	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment
Fifteenth	2	- Knowledge and understanding. - Practical skills.	Lymphoid & Myeloid leukemia	- Traditional lecture-based learning - Active learning - Laboratory/practical learning	1. Written Exams 2. Practical Exams / Lab Tests 3. Continuous Assessment 4, Formative Assessment

11. Course Evaluation

The following evaluation methods are adopted:

- 1- Written Exams
- 2- Practical Exams / Lab Tests
- 3- Oral Exams / Viva
- 4- Reports

Distribution of grades:

- %٥٠ • Written tests -١
- %٣٠ • Practical tests -٢
- %١٠ • Oral assessment -٣
- %١٠ • Reports -٤

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Abbas, A. K., Lichtman, A. H., & Pillai, S. (2024). Cellular and Molecular Immunology (10th ed.). Elsevier.
Main references (sources)	Chapel and Haeney's Essentials of Clinical Immunology, 7th Edition, Siraj A. Misbah, Gavin P. Spickett, Virgil A.S.H. Dalm, 2023
Recommended books and references (scientific journals, reports...)	Rich, R. R., Fleisher, T. A., Shearer, W. T., Schroeder, H. W., Weyand, C. M., & Fauci, A. S. (2023). Clinical Immunology: Principles and Practice (6th ed.). Elsevier.
Electronic References, Websites	WHO Immunization Resources (https://www.who.int/immunization) • CDC Immunization and Immune Disorders (https://www.cdc.gov/immunization) •

Academic description of Clinical Immunology/2 - 4th Stage

Signature :

Name :dr. Hakeem Ghani Hassan

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Clinical chemistry

1. Course Name :	
Clinical chemistry	
2. Course Code:	
MTML4205	
3. Semester / Year:	
Eighth semester/Fourth academic year (8/4)	
4. Description Preparation Date:	
2025- 2026	
5. Available Attendance Forms:	
Personal attendance	
6. Number of Credit Hours (Total) / Number of Units (Total):	
90 Hours(30 Hours Theoretical + 60 Hours Practical) / 4 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Eyad Ali Othman	Email: dr.ieadothman@gmail.com Eyad-othman@alayer.edu.iq
8. Course Objectives	
Course Objectives : The students able to : - Introducing the student to the basic principles related to pathological analyses w regard to clinical chemistry and familiarizing the student with them. - The curriculum includes topics on the theoretical and practical foundations laboratory tests in clinical chemistry for various diseases, with special emphasis on tests organ functions and tests of some other organs that form biochemical components, and introduction of important experiments with modern techniques in laboratory diagnosis, so to give the student a new opportunity to become familiar with qualitative tests.	
9. Teaching and Learning Strategies	
Strategy	- Problem-based teaching: Begin by presenting a vague clinical case, and have students identify appropriate tests and interpret the results to arrive at a diagnosis. - Link theory to practice: Dedicate a portion of the lecture to discussing examples from a real clinical chemistry lab and choosing between analytical methods.

- Use short tests that focus on interpretation rather than memorization, such as presenting a set of results and analyzing them.
- Technology: Use simulation software to interpret results or videos to demonstrate the operation of advanced equipment (such as spectrophotometers and chromatography).
- Collaborate with teachers of other subjects (such as internal medicine or pathology) to hold joint lectures on complex disease cases.
- The key is to transform the material from mere reference values and analytical methods into a dynamic diagnostic tool, where understanding the clinical application and ensuring the quality of the results is the primary goal.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Clinical chemistry					
1	2	The student learns the importance of water and electrolytes in body fluids.	Introduction to water & Electrolytes classified as anions and cations .	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
2	2	The student learns the analytical techniques of blood gases and pH and the importance of these analyses.	Analytical Techniques Blood Gases, pH, and and Intrum Buffer Systementa	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	exam and direct questions in class.
3	2	The student learns the analytical techniques of blood gases and pH and the importance of these analyses.	Analytical Techniques Blood Gases, pH, and and Intrum Buffer Systementa	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
4	2	The student looks at rare materials and their importance.	Trace Elements	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
5	2	The student learns about the functions	Cardiac function	1-The teacher prepares lectures	Oral exam and direct questions

		of the heart.		about the lecture in paper and electronic form and presents them to the students.	in class.
6	2	The student learns about the functions of the kidneys.	Renal Function	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
7	2	The student learns about the functions of the liver.	Liver function	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
8	2	The student learns about the functions of the pancreas.	Pancreatic Function and Gastrointestinal Function	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
9	2	The student understands the importance of clinical chemistry and pediatric disease.	Clinical Chemistry and pediatric patient	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
10	2	The student learns about toxicology.	Toxicology	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
11	2	The student studies tumor markers	Tumor markers	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
12	2	The student studies tumor markers	Tumor markers	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
13	2	The student studies tumor markers.	Flowcytomatry	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
14	2	The student gains information about flow cytometry.	Several other case study &	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
15			Exam	2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and

					direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
Syllabus of The Practical Course					
1	4	The student masters the collection and preparation of patient samples.	Patient sample collection & use of the laboratory.	Explain and then have students work in groups	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
2	4	The student masters the collection and preparation of patient samples.	Patient sample collection & use of the laboratory.	Explain and then have students work in groups	1-Multiple choice questions.
3	4	The student completes the use of basic laboratory techniques.	Basic laboratory principle and techniques	Explain and then have students work in groups	2- Oral exam and direct questions in class.
4	4	The student learns laboratory management.	Laboratory management	Explain and then have students work in groups	3- Laboratory work reports.
5	4	The ability to avoid analytical variability.	Sources and control of pre-analytical variation	Explain and then have students work in groups	1-Multiple choice questions.
6	4	The ability to avoid analytical variability.	Sources and control of analytical, variation	Explain and then have students work in groups	2- Oral exam and direct questions in class.
7	4	Gain experience handling various body fluid sample	Technical for body fluids (CSF, Urine ,G.S.E)	Explain and then have students work in groups	3- Laboratory work reports.
8	4	The student learns the use of spectroscopic	Spectral techniques DM	Explain and then have students work in groups	1-Multiple choice questions.

		techniques.			
9	4	The student learns the technique of separating glycosylated hemoglobin.	Separation technique HbA1c	Explain and then have students work in groups	2- Oral exam and direct questions in class.
10	4	The student learns the applications and types of chromatography	Chromatography theory and practice	Explain and then have students work in groups	3- Laboratory work reports.
11	4	The student learns the principles of liquid chromatography	Liquid chromatography	Explain and then have students work in groups	1-Multiple choice questions.
12	4	The student learns the principles of gas chromatography	Gas chromatography	Explain and then have students work in groups	2- Oral exam and direct questions in class.
13	4	The student understands the mechanism of mass spectrometry	Mass spectrometry	Explain and then have students work in groups	3- Laboratory work reports.
14	4	The student learns the importance of using radioactive isotopes in clinical chemistry.	Radioisotopes in clinical chemistry	Explain and then have students work in groups	1-Multiple choice questions.
15	4	The student learns how to use electrophoresis to separate proteins.	Electrophoresis	Explain and then have students work in groups	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.

					4- Mid-term exam 5- Final exam
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11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes
2. Monthly Exams
3. Practical Exams
4. Reports
5. Final Exam

6.

7.

Distribution of grades:

1. Daily tests (10 marks)
2. Monthly exams (20 marks)
3. Activities and reports (10 marks)
4. Final practical exam (20 marks)
5. Final theoretical exam (40 marks)

6.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-Clinical Chemistry TECHNIQUES, PRINCIPLES, CORRELATIONS SIXTH EDITION Michael L. Bishop, MS, CLS, MT(ASCP) 2-Tietz Textbook of clinicalchemistry:C.A, Burtius&E.J Ashwood :4 th : Saunders C,2004
Recommended books and references (scientific journals, reports...)	-Lehninger Principl of Biochemistry ,D ,L, Nelson& M.I Cox 2000)
Electronic References, Websites	- WWW.CIsi.org WWW.cap.org

Academic description of **Clinical chemistry**

Stage IV

Signature :

Name : dr.Eyad Ali Othman

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Medical Bacteriology 2

1. Course Name :	
Diagnostic Bacteriology 2	
2. Course Code:	
MTML4202	
3. Semester / Year:	
8/4	
4. Description Preparation Date:	
2025/2026	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total):	
90/4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Asaad Abbas Jlood Email: Asaad.jlood@alayen.edu.iq	
8. Course Objectives	
Course Objectives : The students able to : - Provide students with the fundamental concepts of diagnostic bacteriology and its clinical applications. - Enable students to properly collect and transport clinical specimens. - Train students to culture, isolate, and identify pathogenic bacteria using conventional and modern methods. - Develop students' skills in interpreting microbiological results and correlating them with clinical findings. - Reinforce biosafety and infection control principles in the laboratory. - Introduce students to advanced molecular and immunological diagnostic techniques. - Prepare students for accurate and professional practice in clinical diagnostic laboratories.	
9. Teaching and Learning Strategies	
Strategy	- Interactive theoretical lectures using multimedia and audiovisual aids. - Practical laboratory sessions on bacterial cultivation, isolation, and identification. - Group discussions and case study analysis. - Problem-Based Learning (PBL) to promote critical thinking. - Laboratory notebooks and practical reports. - Educational videos and e-learning platforms. - Quizzes and in-class assignments.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Diagnostic Bacteriology 2					
1	6	Identify the main bacterial pathogens involved in dental caries and periodontal diseases, explain their pathogenic mechanisms, and describe laboratory diagnostic approaches	Dental and periodontal infections	Lecture + Discussion	Quiz + Class participation
2	6	Describe bacterial pathogens causing gastrointestinal (e.g., infections <i>Salmonella</i> , <i>Shigella</i> , <i>Vibrio</i> , <i>E. coli</i>), their transmission, modes of and laboratory diagnostic methods.	Bacterial infections of gastrointestinal tract	Lecture + Discussion	Quiz + Class participation
3	6	Describe bacterial pathogens causing gastrointestinal (e.g., infections <i>Salmonella</i> , <i>Shigella</i> , <i>Vibrio</i> , <i>E. coli</i>), their transmission, modes of and laboratory diagnostic methods.	Bacterial infections of gastrointestinal tract	Practical session + Demonstration	Practical assessment + Report
4	6	Understand the major bacterial virulence factors such as exotoxins, endotoxins, biofilm formation, and efflux pump mechanisms, and their clinical significance in antibiotic resistance and infection persistence.	Virulence factors (toxins, biofilm, efflux pumps)	Practical session + Demonstration	Practical assessment + Report
5	6	Understand the major bacterial virulence factors such as exotoxins, endotoxins, biofilm formation, and efflux pump mechanisms, and their clinical significance in antibiotic resistance and infection persistence.	Virulence factors (toxins, biofilm, efflux pumps)	Lab experiment + Group work	Lab exam + Logbook
6	6	Identify causative bacterial agents of UTIs (<i>E. coli</i> ,	Bacterial infections of urinary tract systems	Lab experiment + Group work+ lecture	Lab exam + Logbook

		<i>Klebsiella</i> , <i>Proteus</i> , <i>Pseudomonas</i>), describe diagnostic techniques, and interpret culture results and antibiotic susceptibility patterns			
7	6	Identify causative bacterial agents of UTIs (<i>E. coli</i> , <i>Klebsiella</i> , <i>Proteus</i> , <i>Pseudomonas</i>), describe diagnostic techniques, and interpret culture results and antibiotic susceptibility patterns	Bacterial infections of urinary tract systems	Lab practice + Lecture	Practical + Written test
8	6	Recognize bacterial pathogens of the genital tract (e.g., <i>gonorrhea</i> , <i>Neisseria Chlamydia trachomatis</i> , <i>Treponema pallidum</i>), and apply appropriate diagnostic laboratory methods.	Diagnosis of bacterial genital tract infections	Multimedia lecture + Discussion	Written exam + Report
9	6	Recognize bacterial pathogens of the genital tract (e.g., <i>gonorrhea</i> , <i>Neisseria Chlamydia trachomatis</i> , <i>Treponema pallidum</i>), and apply appropriate diagnostic laboratory methods.	Diagnosis of bacterial genital tract infections	Lecture + Case study	Quiz + Oral discussion
10	6	Explain the pathophysiology of bloodstream infections, identify common bacterial agents, and perform laboratory procedures for detection (e.g., blood culture techniques).	Blood Stream infections	Clinical lecture + Case review	Exam + Report
11	6	Identify bacterial causes of meningitis (e.g., <i>Neisseria meningitides</i> , <i>Streptococcus pneumoniae</i> , <i>Haemophilus influenzae</i>), understand sample processing (CSF), and interpret diagnostic results	Meningitis and other infections of the central nervous system	Lecture + Lab work	Practical + Continuous assessment
12	6	Perform and interpret	Antibiotic susceptibility tests	Lecture Case	Oral + Practical

		antibiotic susceptibility tests using standard methods (e.g., Kirby-Bauer disk diffusion, MIC, E-test), and understand their clinical importance in guiding antimicrobial therapy		presentation + Discussion	test
13	6	Perform and interpret antibiotic susceptibility tests using standard methods (e.g., Kirby-Bauer disk diffusion, MIC, E-test), and understand their clinical importance in guiding antimicrobial therapy	Antibiotic susceptibility tests	Lecture + Practical session	Written + Practical exam
14	6	Perform and interpret antibiotic susceptibility tests using standard methods (e.g., Kirby-Bauer disk diffusion, MIC, E-test), and understand their clinical importance in guiding antimicrobial therapy	Antibiotic susceptibility tests	Lecture + Practical session	Written + Practical exam
15	6	Evaluate theoretical and practical competencies	Exam	Review + Final exam	Final written & practical exam

11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes: To assess weekly comprehension.
2. Monthly and Oral Exams: To evaluate understanding and reasoning.
3. Practical Examinations: To assess laboratory performance and precision.
4. Reports and Assignments: To measure research and analytical skills.
5. Final Examination (Theoretical & Practical): To assess overall understanding of the course.

Distribution of grades:

1. Attendance and Participation – 5 marks
2. Daily and Oral Tests – 5 marks
3. Monthly and Written Exams – 20 marks
4. Laboratory Reports and Activities – 10 marks
5. Final Theoretical Exam – 40 marks
6. Final practical Exam – 20 marks

12. Learning and Teaching Resources

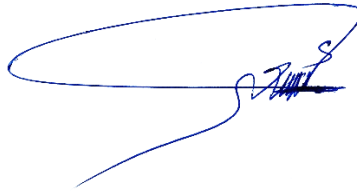
Required textbooks (curricular books, if any)

- Forbes, B. A., Sahm, D. F., & Weissfeld, A. S. (2022). *Bailey & Scott's Diagnostic Microbiology* (15th ed.). Elsevier.

	• Carroll, K. C., Hobden, J. A., Miller, S., Morse, S. A., Mietzner, T. A., Detrick, B., Mitchell, T. G., & Zhang, Q. (2022). <i>Jawetz, Melnick & Adelberg's Medical Microbiology</i> (29th ed.). McGraw-Hill. • Carroll, K. C. et al. (2023). <i>Manual of Clinical Microbiology</i> (13th ed.). ASM Press
Main references (sources)	1. Koneman, E. W., Allen, S. D., Janda, W. M., Schreckenberger, P. C., & Winn, W. C. (2020). <i>Color Atlas and Textbook of Diagnostic Microbiology</i> (8th ed.). Lippincott Williams & Wilkins. 2. <i>Diagnostic Microbiology and Infectious Disease</i> – A peer-reviewed scientific journal providing updates in bacterial diagnostics and clinical correlation. 3. World Health Organization (WHO). <i>Laboratory Diagnosis of Bacterial Pathogens: Guidelines for Clinical Laboratories</i>, 2021.
Recommended books and references (scientific journals, reports...)	• Baron, E. J., & Fine gold, S. M. (2022). <i>Bailey & Scott's Short Course in Clinical Microbiology</i>. • ASM (2022). <i>Biosafety Guidelines for Microbiology Laboratories</i>. • Recommended scientific journals: • <i>Journal of Clinical Microbiology (JCM)</i> • <i>Clinical Infectious Diseases (CID)</i> • <i>The Lancet Microbe</i> • <i>Frontiers in Microbiology</i>
Electronic References, Websites	• World Health Organization (WHO): https://www.who.int • U.S. Centers for Disease Control and Prevention (CDC): https://www.cdc.gov/lab • American Society for Microbiology (ASM): https://asm.org • PubMed – National Library of Medicine: https://pubmed.ncbi.nlm.nih.gov • Microbiology Online: https://microbiologyonline.org • ScienceDirect – Microbiology Section: https://www.sciencedirect.com

Academic description of Diagnostic Bacteriology 2
Stage: Fourth

Signature:

A handwritten signature in blue ink, appearing to be 'Asaad Abbas Jlood', written in a cursive style.

Name: Dr. Asaad Abbas Jlood

1. Course Name:					
Diagnostic parasitology (2)					
2. Course Code:					
MTML4204					
3. Semester / Year:					
Eight Semester / Fourth year (٤/٨)					
4. Description Preparation Date:					
2025/2026					
5. Available Attendance Forms:					
Personal+hypothetical (on line)					
6. Number of Credit Hours (Total) / Number of Units (Total):					
4/3					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Murhaf Lahlah Email: murhaflahlah@gmail.com					
8. Course Objectives					
Course Objectives		At the end of the semester, the student will be able to identify and diagnose different types of medical worms.			
9. Teaching and Learning Strategies					
Strategy		1. Study the taxonomic characteristics of each genus of pathogenic worms. 2. Study the laboratory diagnostic methods for each genus, including serological and molecular methods. 3. Study the medical and pathological significance of the worm genera prevalent in Iraq and the pathogenicity of each genus.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
	6	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern		Laboratory and computer equipment	Various quizzes and classroom activities

		equipment in the laboratory.			
1			Introduction to Helminths Classification of helminthes into: Phylum Platyhelminths which includes; Class Cestoda& Class Trematoda		
2			General characters of: Platyhelminths& Class Cestoda		
3			Genus Taenia including <i>Taeniasaginata</i> & <i>T. solium</i> Morphology, habitat, mode of infection, infective stage, life cycle and laboratory diagnosis; differentiate between both species in labrotory		
4			<i>Echinococcusgranulosus</i> Short notes on the parasite with special emphasis on the methods of diagnosis (detection of certain Ag)		
5			Hymenolepis Nana ; History and Distribution; Habitat; Morphology; Life Cycle; Clinical Feature; Laboratory Diagnosis; Treatment; Prophylaxis; Hymenolepis Diminuta; Dipylidium Caninum; Morphology; Life Cycle; Clinical Features; Diagnosis; Treatment		
6			Genus Schistosoma in general with emphasis on the species endemic in Iraq <i>Schistosomahaematobium</i> the use of special technique in the examination of urine sample (filtration by Schisto-kit) as direct method and immunoblot as indirect method		
7			Genus Lung Flock <i>Paragonimus Westermani</i> History and Distribution; Morphology; Habitat; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis		
8			Phylum Nematelminths in general		

			General Characteristics; Life Cycle; Modes of Infection; Classification; Larva Migrans; Cutaneous Larva Migrans; Visceral Larva Migrans		
9			<i>Trichinella Spiralis</i> History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis		
10			<i>Strongyloides Stercoralis</i> History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis		
11			<i>Ascaris lumbricoides</i> History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis		
12			<i>Enterobius vermicularis</i> , History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment; Prophylaxis		
13			Modified Kato-Katz technique for examination of thick smear, application of anal swab for pin worm		
14			Harada-Mori technique for cultivation of hook worm and detection of rhabditiform and filariform larvae		
15			Final exam		
Syllabus of The practical Course					
16			-Introduction to diagnostic medical parasitology -Laboratory Safety (Handling Specimens) -Care of the microscope Samples we need for detection about the parasites-		
17			Strategies for diagnosis of		

			parasitic infection- -Collection and transport of specimens for enteric pathogens - Factors interfering for all types of stool collection Precaution in the procedure of collection of specimens -		
18			-Examination of stool sample: Macroscopic examination of stool- Microscopic examination of stool-		
19			Preparation of solution of wet mount; the advantages and disadvantages of each solution: -Saline solution Iodine solution- Eosin solution-		
20			Preparation of preservatives and fixatives for mounted slides - Formalin solution (5-10%) - PVA (Poly Vinyl Alcohol) as fixative - Schaudinnes fixatives		
21			Laboratory diagnosis of enteric protozoa- The routine methods used in Laboratory diagnosis-		
22			-Preparation of buffered methylene blue (BMB) stain for detect amoebic trophozoite.		
23			-Concentration methods -Purpose to use concentration methods Types of concentration methods		
24			-Artifacts found in fecal specimens (Artifacts mimicking ova and parasites). Kato Kats method		
25			-Application of immunological methods in diagnosis of parasites in general - Detection of antibodies in serum of patients with enteric protozoa(ELISA)		
26			- Detection of antigens in stool specimen protozoa(ELISA)		
27			Rapid test as an immunological diagnosis for visceral leishmaniasis --		
28			Laboratory diagnosis intestinal		

			coccidian e.g <i>Cryptosporidium parvum</i> by Modified Zeihl-Neelsen stain		
29			-Direct detection and Indirect Diagnosis (serological methods) for detection of <i>Toxoplasma gondii</i>		
30			-Methods of laboratory diagnosis include: Preparation and detection of parasite in thick and thin blood Smear- -Quantitative Buffy Coat (QBC) test -Non microscopic test Rapid Diagnostic Test (RDTs)-		

11. Course Evaluation

The following evaluation methods are adopted:

1. the tasks assigned to the student such as daily preparation
2. daily oral
3. monthly
4. written exams
5. reports...ect.
- 6.
- 7.

Distribution of grades:

Distributing the score out of 100 according to:

1. 20 St1
2. 20 St2
3. 60 Final exam
- 4.
- 5.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Twinning decisions with Iraqi universities
Main references (sources)	1-Hoffbrand's essential hematology. A. Victor Hoffbrand and Andrew A.H. Moss, 7th edition, Wiley Blackwell (2016). 2-Hematology in clinical practice. Roberts. S. Hillman and Kenneth A, 5th edition, McGraw Hill Lange medical books (2011).
Recommended books and references (scientific journals, reports...)	3-Dacie and Lewis Practical hematology. S. Mitchell. Lewis and Barbara J. Bain, 10 th edition, Churchill Livingstone Elsevier (2006).

Academic description Diagnostic parasitology (2) - Fourth Stage

Signature :

Name : Ass. Prof. Murhaf Lahlah

1. Course Name :	
Research methods	
2. Course Code:	
3. Semester / Year:	
First semester/first year	
4. Description Preparation Date:	
10 - 1- 2025	
5. Available Attendance Forms:	
Attendance in class	
6.Number of Credit Hours (Total) / Number of Units (Total):	
30 hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nabil Tabaja - M.sc. Shams Yousef Ali Email: : shamsyousifali@gmail.com	
8. Course Objectives	
Course Objectives : The student able to : • How to write a research paper using a scientific methodology • Developing the student's abilities in the field of scientific research as well as his ability to perceive, understand and comprehend the criteria on which he relies in choosing a research topic and choosing the appropriate method for the research topic and methods of collecting data and information and choosing methods of analyzing this data and information to reach the research goal. • Developing a comprehensive understanding of the concepts of research methods. • Writing the research paper in a systematic manner • Gaining experience in writing scientific research	
9. Teaching and Learning Strategies	
Strategy	1. Actively participate in class discussions about research writing methods. 2. Implement the steps accurately and with understanding. 3. Effectively communicate knowledge of research writing methods to diverse audiences. 4. Increase educational activities that focus on developments in research writing methods.

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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part					
1	1	Introduction a comprehensive information to describe scientific research	Research Methodology	Interactive lectures	Direct questions in class
2	1	Understanding the types of scientific research	What are the research objectives	Interactive lectures supported by presentations	Quiz
3	1	Understanding the uses of each type of research and learning how to study it	What are the research objectives	In-class lecture	Direct questions in class
4	1	Learning about the mechanism of taking samples and methods of preserving samples	Sampling - Epidemiological studies	The instructor prepares lectures about the lecture in paper and electronic form and presents them to the students.	Direct questions in class
5	1	Understanding the types of studies and a comprehensive description of each study	What are the limitations of the study (research)	Interactive lectures supported by presentations	Direct questions in class

The following evaluation methods are adopted:

- Distribution of students' grades from 30 points for the entire course, and the student is subject to two university exams.
-
- Pursuit exam: 15 points
-
- Final exam: 70 points

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

Academic description of Medical Laboratories department for Research
methods
- Fourth Stage

Dr. Nabil Tabaja

M.SC. Shams Yousef Ali

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Stem cells and embryology

1. Course Name :					
Stem cells and embryology					
2. Course Code:					
MTML4203					
3. Semester / Year:					
Eighth semester/ Fourth stage (8/4)					
4. Description Preparation Date:					
2025- 2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
30 Hours/ 2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: MSC. Hasan Hanoon			Email: hasanhanon56@gmail.com		
8. Course Objectives					
Course Objectives : The students able to : • Learn about stem cells, their types, characteristics, and role in the medical field, as well as embryology, the transformation of sex cells into males or females, the stages of embryonic development, and the diagnosis of fetal abnormalities before birth.					
9. Teaching and Learning Strategies					
Strategy		• Discussion • Report preparation • Brainstorming			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Stem cells and embryology					
١	٢	-Define stem cells	Introduction , what are stem cell	-In attendance	-Discussion
٢	٢	-Remember the types of stem	-What are the Properties of Stem Cells That	- Power point	-Oral Exam
٣	٢				-Preparing a Report

		cells -Compare the types -Discuss the relationship between cell division and differentiation	Make Them Different from Other Cells? -Totipotency and Pluripotency, and Embryonic Stem Cells -Multipotency, Unipotency, and Adult Stem Cells - Cell Division and Aging: The Role of Telomerase -The Relationship Between Cell Division and Differentiation: Epigenetics -Epigenetics in Stem Cells Characterizing of stem cells , Origins and Types of Stem Cells: What's in a Name? -Pluripotent Stem Cells – Multipotent Stem Cells Genetic Modification and the Labeling of Cell Lineages Cell Differentiation and Growth Stem Cells in the Body		
ξ	۲		Regenerative Medicine: Clinical Applications of Stem Cells		
ο	۲	-Remember the classification of stem cells -Explain genetic modification	-Therapeutic Cell Transplantation -Number of Cells Needed for Cell Transplantation -Why Some Diseases will be Treatable with Stem Cells in the Future and Others Not	-In attendance - Power point	- Discussion -Daily exam

			-The Best Stem Cells for Transplantation -Risks Associated with a Stem Cell Transplantation -Stem Cells Rejected After Transplantation General Embryology		
٦	٢	Stem cell differentiation scheduling	Gametogenesis: conversion of germ cells into male and female gametes	-In attendance - Power point	-Preparing a report
٧	٢	Stem cell transplantation treatment discussion	First week of development: ovulation to implantation	-In attendance - Power point	- - Discussion
٨	٢	Definition of embryology	Second week of development: Bilaminar germ disc	-In attendance - Power point	-Oral quiz
٩	٢	-Explain gamete formation	Third week of development: Trilaminar germ disc	-In attendance - Power point	- Discussion in groups
١٠	٢	-Remember the meaning of implantation	Third to eight week: The Embryonic period	-In attendance - Power point	-Oral quiz
١١	٢	-Explain the meaning of the bilamellar germinal disc	Third month to birth: The fetus and placenta	-In attendance - Power point	-Preparing a report
١٢	٢	-Compare it with the second week of development	Birth defects and prenatal diagnosis	-In attendance - Power point	- Comparison with previous topics
١٣	٢	-Learn about embryonic development	Introduction , what are stem cell -What are the Properties of Stem Cells That Make Them Different from Other Cells? -Totipotency and	-In attendance -Power point	-D Quiz

			Pluripotency, and Embryonic Stem Cells -Multipotency, Unipotency, and Adult Stem Cells - Cell Division and Aging: The Role of Telomerase -The Relationship Between Cell Division and Differentiation: Epigenetics -Epigenetics in Stem Cells		
١٤	٢	-Design a chart showing the development from the third month until birth	Characterizing of stem cells , Origins and Types of Stem Cells: What's in a Name? -Pluripotent Stem Cells – Multipotent Stem Cells Genetic Modification and the Labeling of Cell Lineages	-In attendance - Power point	-Preparing a report
١٥	٢	-Identify birth defects before birth	Cell Differentiation and Growth Stem Cells in the Body	-In attendance - Power point	-Discussion -Oral quiz

11. Course Evaluation

The following evaluation methods are adopted:

1. Daily exam
2. Monthly exam
3. Final exam
4. Daily evaluation

Distribution of grades:

1. Monthly exam: 25 points
2. Daily evaluation/ Exam: 5 points
3. Final exam: 70 points

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Langman's Medical Embryology (Longmans Medical Embryolgy) Fifteenth, North American Edition/January 13,2023 Dr. T.W. Sadler PhD
Recommended books and references (scientific journals, reports...)	International Society for Stem Cell Research (ISSC)
Electronic References, Websites	/https://embryology.med.unsw.edu.au

Academic description of Stem cells and embryology - Fourth Stage

Signature :

Name :

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Antibiotic resistance and infection

1. Course Name :					
Antibiotic resistance and infection					
2. Course Code:					
MTML4206					
3. Semester / Year:					
Eighth semester/ Fourth stage (8/4)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hours for theoretical + 60 for practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Assistant Dr. Moayad Jilab Email: Moayadjilab@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : - Introduce the student to the meaning and importance of antibiotics - Introduce the student to ways to limit the spread of infection					
9. Teaching and Learning Strategies					
Strategy		- Teamwork - Brainstorming - Discussion			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Antibiotic resistance and infection					
1	2	-Define viral infections -Identify how they are	Introduction to Antibiotics (Defintion - discovery-sources)	-In attendance - Power point	-Discussion -Oral Exam

		detected and their sources			
2	2	-Understand their new types	Antibiotics (Types, Uses and side effects) Mode of action of Antibiotics	-In attendance - Power point	-Report Preparation -Group Discussion
3	2				
4	2	-Discuss antiviral activity	Cell wall Inhibition(Beta-Lactams - penicillins, cephalosporins, carbapenems and monobactams)	-In attendance - Power point	- Group Discussion
5	2	-Define how vital goals are achieved	Mycolic acid and arabinogalactan biosynthesis Inhibition in mycobacteria	-In attendance - Power point	-Report Preparation -Discussion
6	2	-Summarize the synthesis of some acids	Protein synthesis Inhibition (Aminoglycosides, Tetracyclines, Chloramphenicol etc.)	-In attendance - Power point	-Discussion
7	2	-Explain how organisms eliminate them	Nucleic acid Inhibition (Fluoroquinolones, Rifampicin and rifabutin) Microbial metabolism Inhibition (Sulphonamides, DHFR inhibitors — trimethoprim etc.)	-In attendance - Power point	-Discussion - Short Exam
8	2				
9	2	-Clarify the understanding of rhodamines	Antibiotic resistance (Basis ,causes , Types - MDR, XDR, PDR and control)	-In attendance - Power point	- Group Report Preparation
10	2	-Summarize the metabolism of microbes	Antibiotic Susceptibility tests (disk diffusion method –MIC tests) and Interpretation of the	-In attendance - Power point	- Oral Exam -Discussion

			Results		
11	2	-Define antivirals	Infection control		-Group Discussion
12	2	-Compare different types	Introduction to Antibiotics (Defintion - discovery-sources)	-In attendance - Power point	-Oral Exam
13	2	-Enumerate and compare drug interactions	Antibiotics (Types, Uses and side effects)	-In attendance - Power point	-Report Preparation -Group Discussion
14	2	-Understand infection control methods	Mode of action of Antibiotics	-In attendance - Power point	-Daily Exam -Discussion
15	2				

Syllabus of Practical part for Antibiotic resistance and infection

1	4				- Discussion
2	4	-Know the principles of antibody suitability tests	Principles of Antibiotic suitability test (C&S)	-In attendance - Power point	-Short Exam
3	4	- Use the disk diffusion method	Disc diffusion method	-In attendance - Power point -Lab. work	-Lab Work Evaluation
4	4	- Determine the minimum inhibition limit	Minimum inhibitory carve	-In attendance - Power point -lab. work	-Oral Exam - Discussion
5	4				
6	4	- Summarize AST techniques	Advanced AST techniques	-In attendance - Power point	- Group Report Preparation
7	4	- Calculate AST results	Reading the AST results	-In attendance - Power point	- Daily Work Evaluation
8	4	/	Exam		
9	4	Calculate results	Interpretation of results	-In attendance - Power point	-Group Discussion -Oral Exam

10	4	- Know the standards and guidelines for clinical laboratories	CLSI	-In attendance - Power point	Discussion -Oral Exam
11	4				
12	4	- Discuss the molecular approach to antibody resistance	Molecular method for study antibiotic resistance	-In attendance -Power point	-Report Preparation -Group Discussion
13	4	Design statistical methods for AST studies	Statistical method for study AST techniques	-In attendance -Power point	-Group Discussion
14	4				
15	4	/	Exam		

11. Course Evaluation

The following evaluation methods are adopted:

1. Month exam
2. Final exam
3. Quiz
4. Daily discussion
5. Reports writing

Distribution of grades:

1. The monthly exam : 40 marks/20 marks for theoretical part , 15 marks for practical part.
2. 5 marks for daily evaluation
3. The final exam: 60 marks / 25 marks for practical and 35 marks for theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-Stephen P Denyer,Norman A Hodges, Sean PGorman .(2004). Hugo and Russell's Pharmaceutical Microbiology.Blackwell Science Ltd.7 th edition

	2-Jawetz, Melnick, &Adelberg's.(2019):Medical Microbiology.Twenty-Eighth Edition. 3-Connie R. Mahon, Donald C. Lehman (2019): Textbook of Diagnostic Microbiology, Sixth Edition
Recommended books and references (scientific journals, reports...)	-Bailey &scott's (2017): Diagnostic microbiology,fourteenth edition
Electronic References, Websites	

Academic description of Antibiotic resistance and infection - Fourth Stage

Signature :

Name :

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Computer Applications 1

1. Course Name:	
Computer Applications 1	
2. Course Code:	
MTML3108	
3. Semester / Year:	
Third semester / second academic year (3/2)	
4. Description Preparation Date:	
2025-2026	
5. Available Attendance Forms:	
My presence - my description	
6. Number of Credit Hours (Total) / Number of Units (Total):	
90 hours (30 hours theoretical + 60 hours practical) / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Mr. Mahdi Saleh Kazim Email:salhmhdy128@gmail.com	
8. Course Objectives	
Course Objectives	• Introducing the student to computer applications such as the Excel program and learning about its benefits, specifications, and methods of operating and closing it. • Learning how to open a saved file, enter data, perform mathematical operations, and how to adjust and format data. • Helping the student link the information acquired in the lecture and link it to the labor market to keep pace with scientific development.
9. Teaching and Learning Strategies	
Strategy	The learning and teaching strategy is based on the modern interactive method in university education, where the student is a participating member in the scientific information, through acquisition, analysis and dissemination. Theoretical lectures are based on direct classroom interaction between the instructor and the students through presenting the lesson and direct discussion between the instructor and his students on the one hand and between the students themselves on the other hand through presenting mini-research on scientific vocabulary. As for practical lectures, they are based on explaining the program practically to the student, so that he can then try the program himself and work on some special files in the lecture assignments and try new examples to develop his skills and link theoretical information to practical information and record the variables afterwards.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	1	Learn about the origins of computers and their operation in general	Introduction to computer applications, operating system and components	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
2	1	Learn about Excel and how to start and close it	Excel concept, specifications, and methods of starting and closing it	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
3	1	Mention the methods for opening the file and the method for saving files	How to open Worksheet and workbook files and how to save files	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
4	1	Learn how to enter data and how to perform mathematical operations	How to enter data in Excel, perform calculations and format data	Theoretical lecture	Exam in the last 10 minutes of the lecture
5	1	Explaining data collection in mathematical operations and how to sort them	Collect data or group of cells and sort data	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
6	1	Ability to use functions and explain what each function does	Use some functions like max, min, sum, ave	Theoretical lecture	Exam in the last 10 minutes of the lecture
7	1	Copy, paste and move data	Copy, move and paste the entered data.	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.

8	1	Explaining how to modify the cell, change its shape, color and background	Control the display of the cell and change its style and formatting by using the formatting tools.	Theoretical lecture	Exam in the last 10 minutes of the lecture
9	1	Understand how to work with charts and how to convert.	Dealing with charts and how to convert numeric and text data into charts	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
10	1	The student understands how to make changes to the file.	Make the modifications and revisions provided by the program.	Theoretical lecture	Exam in the last 10 minutes of the lecture
11	1	How to add or delete a row	Add or delete rows or columns in the worksheet	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
12	1	Learn about data printing	Print digital data or charts	Theoretical lecture	Exam in the last 10 minutes of the lecture
13	1	Learn about the SPSS program	SPSS program concept	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
14	1	Explanation of the main screen components	Main screen components and data entry	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
15	1	Save and Restore Method	Data storage and retrieval and data types	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
Syllabus of The Practical Course					
1	2	Learn about the origins of computers and	Introduction to computer applications,	Practical lecture through practical	Ask a question in the last 10

		their operation in general	operating system and components	application of the term	minutes of the lecture.
2	2	Learn about Excel and how to start and close it	Excel concept, specifications, and methods of starting and closing it	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
3	2	Mention the methods for opening the file and the method for saving files	How to open Worksheet and workbook files and how to save files	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
4	2	Learn how to enter data and how to perform mathematical operations	How to enter data in Excel, perform calculations and format data	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
5	2	Explaining data collection in mathematical operations and how to sort them	Collect data or group of cells and sort data	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
6	2	Ability to use functions and explain what each function does	Use some functions like max, min, sum, ave	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
7	2	Copy, paste and move data	Copy, move and paste the entered data.	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
8	2	Explaining how to modify the cell, change its shape, color and background	Control the display of the cell and change its style and formatting by using the formatting tools.	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
9	2	Understand how to work with charts and how to convert.	Dealing with charts and how to convert numeric and text data into charts	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
10	2	The student understands how to make changes to the file.	Make the modifications and revisions provided by the program.	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.

11	2	How to add or delete a row	Add or delete rows or columns in the worksheet	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
12	2	Learn about data printing	Print digital data or charts	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
13	2	Learn about the SPSS program	SPSS program concept	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
14	2	Explanation of the main screen components	Main screen components and data entry	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
15	2	Save and Restore Method	Data storage and retrieval and data types	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.

11. Course Evaluation

The grade is distributed out of 100 over the entire course and the student takes two official university exams. The endeavour is worth 40 points and is divided as follows:
 5 points for class participation and attendance
 15 points for a written practical exam
 20 points for a written theoretical exam
 The final is worth 60 points and is divided as follows:
 25 points for written practical
 35 points for written theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1) Faith Abbey(2022): MY EXCEL GUIDE, Beginners, Intermediate, Advanced, Microsoft Excel. 2) Kevin Pitch(2023) :Excel Guide for Success , Independently published . 3) Aldrich, James . o (2016):Using IBM – SPSS_Statistics Second Edition .

Recommended books and references (scientific journals, reports...)	Global Publishers Microsoft Excel Functions and Formulas with Excel 2019/Office 365
Electronic References, Websites	https://tech-mab.com/excel-basics / https://www.mobt3ath.com/dets.php?page=150

Academic description of Computer Applications 1 \Third Stage

Signature :

Name : Mr. Mahdi Saleh Kazim

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for.....

1.Course Name:

Histopathology1

2.Course Code:

MTML3101

3.Semester /

Fifth course / Third stage (5/3)

4.Description Preparation Date

2025-2026

5.Available Attendance Forms:

In attendance

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

60 Hours (30 hours for theoretical + 30 for practical) / 3 Units

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

Name: : Dr. Hajras Shaker Saleh Email: hajsalsaleh@gmail.com

8.Course Objectives

Course Objectives	• A knowledge: • - It is to provide an idea and basic informant about histopathology and the diseases they cause and develop the student's ability and skill understanding their pathological analyses. 2- The student learns the skill, how and who diseases are diagnostic - 3- The student learns the skill of conduct pathological examinations and different method diagnosis. Evaluation methods 1- Conducting daily qu exams Quizzes 2- Conducting monthly exams 3- Conducting semester and final exams norms in biological studies • Working as a team
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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.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2T + 4 P	The Define Histopathology and historical overview; cell injury; protective responses; tissue repair; diagnostic	Introduction: History of pathology;	Lectures and practical lessons -Discussion	Theory exams - practical
2		Describe how the causes of pathogenic ; The student learns the who cell injury via mainly causes. The cell death by Apoptosis and Necrosis; Cellular adaptations Pathogenesis;; Laboratory Diagnosis	Cell injury and Cell death Pathogenesis; Laboratory Diagnosis	Brainstorming	Discussions
3	2T + 4 P	The student learns and Identify the Inflammation and Acute Inflammation. Features of Acute inflammation, The cell death by Apoptosis and Necrosis;	Inflammation and Acute Inflammation: Nomenclature of acute inflammation, Vascular response and Cellular	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
4	2T + 4 P	The student will learn the Protective responses against the injury via many of the body's defenses ;Especially the immune system defenses, Giant cells	Chronic Inflammation response; Morphology; of Granuloma , Lab diagnostic	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
5	2T + 4 P	Explain the types of tissue repair; Two types of repair; Regeneration and Scar	Tissue Repair (Healing): Two types of repair; Regeneration and Scar formation. Lab Diagnosis.	Lectures and practical lessons -Discussion	Theory exams - practical - Discussions

		formation; Stem cells; Factors that effected of healing.		Brainstorming	
		Morphology of healing; Phases; Pathogenicity and histologic features Of wound healing; Laboratory Diagnosis;			
6	2T + 4 P	The student will learn Haemodynamic Disorders, types of haemodynamic, Active hyperemia occurred in the arteries and passive hyperemia occurred in the veins; Morphology; cusses of Hyperemia; Pathogenicity and Features; Laboratory Diagnosis.	Haemodynamic Disorders ; Active hyperemia and Passive hyperemia (Congestion); Pathogenicity; Laboratory Diagnostic	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
7	2T + 4 P	To identify types of There are many different types of amyloidosis caused by about 30 different amyloid-forming proteins. Most types are systemic, affecting more than one organ or tissue ; symptoms.	Immunopathology Including Amyloidosis: Amyloidosis is the name for a group of disorders where people have proteins that fold in an abnormal way to form fibrils.	- Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

8	2T + 4 P	Interpret the Hereditary disorders and Congenital diseases. Lab. Diagnosis, including microscopic examination.	Genetic Diseases: There are several types of genetic abnormalities that affect the structure and function of proteins, disrupting cellular homeostasis and contributing to disease	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
9	2T + 4 P	To Assess the effectiveness mineral content of aged bones declines, eventually resulting in Osteoporosis a condition in which bones become more fragile and prone to fractures	Bone: As humans age, the rate of bone resorption by osteoclast cells outpaces the rate of bone formation	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
10	2T + 4P	To learn about Multiple factors contribute to the structural integrity of whole bones: the total bone mass, the bone geometry, and the properties of the constituent tissue.	Techniques for analyzing bone	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
11	2T + 4P	Describe the Competence in muscle biopsy evaluation is a core component of neuropathology practice. Lab diagnostic	Neuropathology and Muscle biopsies	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

12	2T + 4P	Define key terms Concretions a hard usually inorganic mass (such as a bezoar or tophus) formed in a living body; Renal concretions, more commonly known as kidney stones are hard deposits that form in the kidneys, Calcium oxalate stones	Concretions Pathology. a solid or calcified mass in the body formed by a disease process. Calcium oxalate stones.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
13	2T + 4P	To learn about Nature of Genetic Abnormalities Contributing to Human Disease. There are several types of genetic abnormalities that affect the structure and function of proteins, disrupting cellular homeostasis and contributing to disease.	Genetic diseases : Mutations in Protein-Coding Genes; Examples of autosomal dominant disorders: Marfan syndrome Hypercholesterolemia Polycystic kidney disease Hereditary spherocytosis Familial polyposis coli.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
14	2T + 4P	To learn about Obstructive Circulatory Disturbances: thrombi may be of various shapes, sizes and composition depending upon the site of origin; Atherosclerosis; Shock, Edema. Lab diagnosis.	Obstructive Circulatory Disturbances: pathology ,Lab diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
15	2T + 4P	Explain about the General Pathology of Infectious Diseases, are diseases in which tissue damage or dysfunction is produced by microorganisms. Epidemiology , Lab diagnosis; Infectious agents	General Pathology of Infectious Diseases, five of the ten leading causes of death are infectious diseases, Host barriers to infection: Skin: Respiratory system: GIT Urogenital tract; Lab diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - 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. Histology for Pathologists 2. Principle of Medical Physiology
Main references (sources)	Medical Pathology: A Self-instructional T

Recommended books and references (scientific journals, reports...)	1- NCBI 2- PubMed 3- You tube
Electronic References, Websites	American Diabetes Association Professional Practice Committee (2019). "Professional Practice Committee: Standards of Medical Care in Diabetes—2019". Diabetes Care. 42 (Supplement 1): s46–s60. doi:10.2337/dc19-S005.

Academic description of Histopathology1 –Third Stage

Signature :

Name :Dr. Hajras Shaker Saleh

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Advanced laboratory techniques

1. Course Name :					
Advanced laboratory techniques					
2. Course Code:					
MTML3107					
3. Semester / Year:					
Fifth course / Third stage (5/3)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
60 Hours (15 hours for theoretical part + 15 for practical part) / 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Salam Hussein Ewaid			Email: salam.hussein@alayen.edu.iq		
8. Course Objectives					
Course Objectives : The aim of teaching this course is to teach the student how to perform various techniques related to advanced pathological analyses that were not included in his training programs for the previous two years of study and that are related to various specialized topics.					
9. Teaching and Learning Strategies					
Strategy		1.Brain storming 2.Feedback 3.Disscution			
10. Course Structure					
Wee k	Hour s	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Advanced laboratory techniques					
1	2	Understand the principle of the technique, how the device	Bacterial diagnosis (VIETIC System) & BACT automated System	Theoretical scientific lectures + scientific/inte	- Oral Exam

		works, and its applications.		reactive media presentations	
2	2	Mention the importance of the technique and its uses.	Immunochromatography	Theoretical scientific lectures + scientific/interactive media presentations	Discussion
3	2	Identify the types and uses of ELISA.	ELISA	Theoretical scientific lectures + scientific/interactive media presentations	- Report Preparation
4	2	Understand the technique and determine its importance.	Immunofluorescence & Radioimmunoassay	Theoretical scientific lectures + scientific/interactive media presentations	- Daily Exam
5	2	Knowledge of flow cytometry and its uses.	Flow cytometry	Theoretical scientific lectures + scientific/interactive media presentations	- Group Discussion
6	2	Know the importance of tissue culture and discuss its uses.	Tissue culture	Theoretical scientific lectures + scientific/interactive media presentations	- Oral Exam
7	2				
8	2	Understand the principle of the technique and its importance.	Turbidimetry	Theoretical scientific lectures + scientific/interactive media presentations	- Group Report Preparation
9	2	Understand the principle of	Separation techniques, Separation of proteins,	Theoretical scientific	Discussion
10	2				

		separation techniques and the differences between the types.	Separation of amino acids	lectures + scientific/interactive media presentations	
11	2	Know how to analyze body fluids.	Fluid analysis (CSF, synovial fluid, seminal fluid, urine)	Theoretical scientific lectures + scientific/interactive media presentations	- Report Preparation
12	2				
13	2	Understand the technique and the differences between the types.	Types of PCR	Theoretical scientific lectures + scientific/interactive media presentations	- Oral Exam
14	2	Define the importance and uses of microarrays.	Microarrays	Theoretical scientific lectures + scientific/interactive media presentations	- Daily Exam
15	2	Understand the technique and its uses.	CRISPR	Theoretical scientific lectures + scientific/interactive media presentations	- Group Discussion

Syllabus of Practical part for Advanced laboratory techniques

1	2	-Understand the topic -Earn working skills	Bacterial diagnosis (VIETIC System) & BACT automated System	Laboratory team-work	-Oral quiz -lab. Work skills
2	2	-Understand the topic -Knowledge of this technique -Earn working skills	Immunochromatography assays	Laboratory team-work	Discussion -lab. Work skills

3	2	-Define ELISA -Differentiate its types -Earn working skills	Types of ELISA	Laboratory team-work	-Quiz -lab. Work skills
4	2	-Define CIE -Explain its uses -Earn working skills	Counter immunoelectrophoretic (CIE)	Laboratory team-work	-Explanation -lab. Work skills
5	2	-Understand tissue culture -Schedule the steps -Earn working skills	Tissue culture	Laboratory team-work	-Writing skills -lab. Work skills
6	2	-Define	Turbidimetry	Laboratory team-work	-Discussion -lab. Work skills
7	2	Turbidimetry -Discuss Turbidimetry uses -Earn working skills			
8	2	-Memorize tissue culture steps -Recognize cell lines types -Earn working skills	Steps of tissue culture, types of cell lines	Laboratory team-work	-Oral quiz -lab. Work skills
9	2	-Demonstrate technique steps -Earn working skills	Turbidimetry	Laboratory team-work	-Reports -lab. Work skills
10	2	-List the separation techniques -report differences between techniques -Earn working skills	Separation techniques, Separation of proteins, Separation of amino acids	Laboratory team-work	-Oral quiz -lab. Work skills

11	2				
12	2	-Understand the topic -Use some molecular diagnosis equipment -Earn working skills	Molecular diagnostic techniques Genetic disorders of hemoglobin	Laboratory team-work	-Discussion -lab. Work skills
13	2	-Explain PCR -Report PCR types and uses -Earn working skills	Real time PCR	Laboratory team-work	-Reports -lab. Work skills
14	2	-Define the technique -Describe its benefits -Earn working skills	Recombinant DNA Technology	Laboratory team-work	-Evaluation of team work -lab. Work skills
15	2	-Understand the topic -Recognize the uses -Earn working skills	Nanotechnology	Laboratory team-work	-Oral quiz -lab. Work skills

11. Course Evaluation

The following evaluation methods are adopted:

1. Month exam
2. Final exam
3. Quiz
4. Daily discussion
5. Reports writing

Distribution of grades:

1. The monthly exam : 40 marks/20 marks for theoretical part , 15 marks for practical part
2. 5 marks for daily evaluation
3. The final exam: 60 marks / 25 marks for practical and 35 marks for theoretical.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Stevens practical's immunology and serology: a laboratory perspective / Christine Dorresteyn Stevens. — 3rd ed. Mary Louise Turgeon. 2014. Immunology & Serology In Laboratory Medicine 4th ed. -Practical Immunology (Frank C. Hay, and Olwyn M.R. Westwood) -Guide to Lab and diagnostic tests (Tracey B. Hopkins)
Recommended books and references (scientific journals, reports...)	-Methods of medical specimen collection, transportation and processing. (Abdul-Hadi Al-Asheery). -Manual of basic technique for a health laboratory (WHO). -Body fluids, Islamic university in Gaza, Ibtisam H. A-lAswad, Yousif M. EL-Argan and Mohammed M. Laqqan.
Electronic References, Websites	http://www.healthline.com/health/practiacals

Academic description of Advanced laboratory techniques
- Third Stage

Signature :

Name : Prof. Salam Hussein Ewaid

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Clinical Endocrinology

1. Course Name :					
Clinical Endocrinology					
2. Course Code:					
MTML3104b					
3. Semester / Year:					
Fifth course / Third stage (5/3)					
4. Description Preparation Date:					
2025 – 2026					
5. Available Attendance Forms:					
Face to face					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hours for theoretical + 60 for practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Sherif Mohamed Abd El-Hamid Email: sherifmohammed@alayen.edu.iq					
8. Course Objectives					
Course Objectives : The students able to : - Introducing the student to the basic principles related to clinical endocrinology with regard to clinical chemistry and introducing the student to them. - The curriculum includes topics on the theoretical and practical foundations of laboratory tests in clinical chemistry, especially for evaluating the clinical endocrine functions of various diseases, and introducing important experiments with modern techniques in laboratory diagnosis, thus giving the student a new opportunity to become familiar with qualitative tests.					
9. Teaching and Learning Strategies					
Strategy	- Lectures - Discussions - Demonstrations - Lab. Work				
10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning	Evaluation

		Outcomes		method	method
Syllabus of Theoretical part for Clinical Endocrinology					
1	2	Explain the basic function of endocrine glands and their role in the human body.	Introduction to Endocrinology and types of glands, Definition of Hormones, Similarities and Dissimilarities of Hormone and Enzyme. Classification of Hormones, Factors Regulating Hormone Action and Regulation of hormones secretion.	Interactive-visual	Exams and quizzes
2	2	Describe how hormones regulate gene expression by interacting with nuclear chromatin.	MECHANISM ACTION OF HORMONES: 1-Interaction with nuclear chromatin (nuclear action). 2- Membrane receptors. 3-Stimulation of enzyme synthesis at the ribosomal. 4- Direct activation at the enzyme level. 5-c-AMP and hormone action.	Interactive-visual	Exams and quizzes
3	2	Define polyphosphoinositol and diacylglycerol and identify their roles in hormone signaling.	MECHANISM ACTION OF HORMONES: 6- Role of polyphosphoinositol and diacylglycerol in hormone action.	Interactive-visual	Exams and quizzes

			7-Role of calcium in hormone action. 8-Role of c-GMP in hormone action. 9- Role of phosphorylation of tyrosine kinase		
4	2	Explain the role of releasing factors in regulating pituitary gland functions.	The Hypothalamus releasing factors	Interactive-visual	Exams and quizzes
5	2	Describe the anatomical relationship between the hypothalamus and the anterior pituitary gland.	The pituitary anterior gland	Interactive-visual	Exams and quizzes
6	2	Define melanocyte-stimulating hormone (MSH) and identify its source in the intermediate lobe.	The Melanocyte-Stimulating Hormone (MSH) produced by middle (intermediate) lobe. The Posterior Pituitary gland	Interactive-visual	Exams and quizzes
7		Identify the location and structural components of the thyroid gland (e.g., follicles and parafollicular cells).	The Thyroid gland	Interactive-visual	Exams and quizzes
8	2	List the hormones secreted by the thyroid gland, including thyroxine (T4), triiodothyronine (T3), and calcitonin.	The Thyroid gland	Interactive-visual	Exams and quizzes
9	2	Identify the location and structural components of the	The Parathyroid glands	Interactive-visual	Exams and quizzes

		parathyroid glands in the human body.			
10	2	List the hormones secreted by the pancreas, including insulin, glucagon, somatostatin, and pancreatic polypeptide.	The Pancreas gland	Interactive-visual	Exams and quizzes
11	2	Identify the location and structural components of the adrenal glands, including the cortex and medulla.	The Adrenal glands	Interactive-visual	Exams and quizzes
12	2	Demonstrate the effects of adrenaline and cortisol on the body during stress.	The Adrenal glands	Interactive-visual	Exams and quizzes
13	2	Describe the zonation of the adrenal cortex (zona glomerulosa, zona fasciculata, zona reticularis) and the role of the adrenal medulla.	The Gonadal hormones	Interactive-visual	Exams and quizzes
14	2	Identify the other glandular tissues that secrete hormones, including the JG cells the kidney, thymus, pineal gland, and the gastrointestinal (GI) tract.	Several other glandular tissues are considered to secrete hormones, viz.: <i>(JG cells of kidney, Thymus, Pineal gland and GI tract</i>	Interactive-visual	Exams and quizzes
15	2	List the glandular tissues that secrete hormones beyond traditional endocrine organs, including JG cells of the kidney,	Several other glandular tissues are considered to secrete hormones, viz.: <i>(JG cells of kidney, Thymus, Pineal gland and GI</i>	Interactive-visual	Exams and quizzes

		thymus, pineal gland, and the GI tract.	tract		
Syllabus of Practical part for Clinical Endocrinology					
1	4	Identify common methods used for estimating GH levels, such as blood tests measuring GH concentration, insulin-like growth factor 1 (IGF-1) levels, and GH stimulation or suppression tests.	Estimation of GH	interactive-visual	Oral-written quiz-practical application
2	4	Describe the principles behind the diagnostic tests for GH, including the rationale for using specific markers like IGF-1 for GH evaluation.	Estimation of GH	interactive-visual	Oral-written quiz-practical application
3	4	Identify common methods used to estimate insulin levels, such as blood tests, C-peptide measurements, and homeostasis model assessment (HOMA).	Estimation of Insulin	interactive-visual	Oral-written quiz-practical application
4	4	Describe the principle of TSH estimation methods, including the use of antibodies that bind specifically to TSH for its measurement.	Estimation of TSH	interactive-visual	Oral-written quiz-practical application

5	4	Illustrate the process of sample collection, preparation, and testing for T3 and T4 estimation, ensuring accuracy in laboratory procedures.	Estimation of T3 and T4	interactive-visual	Oral-written quiz-practical application
6	4	Describe the principle behind the measurement of prolactin levels using immunoassays, including the use of antibodies specific to prolactin.	Estimation of Prolactin	interactive-visual	Oral-written quiz-practical application
7	4	Describe the principle of immunoassays in measuring hCG levels, focusing on the use of specific antibodies to detect the hormone in blood or urine samples.	Estimation of human chorionic gonadotrophin (hCG)	interactive-visual	Oral-written quiz-practical application
8	4	Identify the laboratory methods commonly used for estimating oestradiol levels, such as enzyme-linked immunosorbent assay (ELISA), radioimmunoassay (RIA), and chemiluminescence immunoassay (CLIA).	Estimation of Oestradiol	interactive-visual	Oral-written quiz-practical application

9	4	Illustrate the procedures involved in sample collection (blood, urine), preparation, and analysis for accurate estrogen measurement.	Estimation of Estrogen	interactive-visual	Oral-written quiz-practical application
10	4	Describe the principle behind the measurement of progesterone using immunoassay techniques, including the use of antibodies that specifically bind to progesterone molecules.	Estimation of progesterone	interactive-visual	Oral-written quiz-practical application
11	4	Describe the principles behind the measurement of LH and FSH using immunoassay techniques, including antibody-antigen interactions and hormone-specific detection.	Estimation of LH and FSH	interactive-visual	Oral-written quiz-practical application
12	4	Illustrate the standard procedures involved in collecting blood or urine samples and preparing them for LH and FSH estimation.	Estimation of LH and FSH	interactive-visual	Oral-written quiz-practical application
13	4	Illustrate the steps involved in sample collection, preparation, and	Estimation of Adrenocorticotrophic	interactive-visual	Oral-written quiz-practical

		analysis for accurate ACTH estimation.	hormone ACTH		application
14	4	Identify the clinical indications for measuring cortisol levels, such as in the diagnosis of Cushing's syndrome, Addison's disease, and suspected adrenal insufficiency.	Estimation of Cortisol	interactive-visual	Oral-written quiz-practical application
15	4	Illustrate the procedure for sample collection (serum, amniotic fluid) and processing for AFP estimation in clinical settings.	Estimation of a-Fetoprotein (AFP)	interactive-visual	Oral-written quiz-practical application

11. Course Evaluation

The following evaluation methods are adopted:

1. Exams
2. Quiz
3. Report
4. Attendance
5. Class Activity
6. Technical Practice

Distribution of grades:

1. Practical Midterm 15%
2. Theoretical Midterm 25%
3. Theoretical Final Term 35%
4. Practical Final Term 25%

Total 100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if

any)	
Main references (sources)	• Clinical Biochemistry Lecture Notes.Tenth Edition Hoboken, NJ: Wiley, 2018. Peter Rae. Mike Crane. Rebecca Pattenden. • Biochemistry. Fourth Edition, 2013. Dr. U. Satyanarayana Dr. U. Chakrapani. Elsevier India Private Limited. • Clinical biochemistry &metabolic medicineeighth edition published in 2012 by Hodder Arnold. Professor Martin Andrew Crook. • Textbook of biochemistry (Sixth Edition) For Medical Students DM Vasudevan, Sreekumari S and Kannan Vaidyanathan. Textbook of Medical Biochemistry Eighth Edition 2012. MN Chatterjea Rana Shinde
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Academic description of Clinical Endocrinology – Third Stage

Signature :

Name : Dr. Sherif Mohamed Abd El-Haimd

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Medical Virology

1. Course Name :					
Medical Virology					
2. Course Code:					
MTML3103b					
3. Semester / Year:					
Fifth course / Third stage (5/3)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
60 Hours (15 hours for theoretical part + 15 for practical part) / 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Maytham Khazal Kazim Email : maythambio@gmail.com					
8. Course Objectives					
Course Objectives : • Introducing the student to medical viruses, the diseases they cause, and how to diagnose & treat them.					
9. Teaching and Learning Strategies					
Strategy		• Cooperative learning • Active learning • Exploratory method • Student-centered learning • Self-directed learning • Multimedia education • Various assessment methods			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Medical virology					
2+1	4	Understanding the structure and biology of viruses :	General properties of Viruses, Structure, Classification, Atypical Virus-like agent (Prion,	Active learning	- Oral Exam

		Learn the characteristics of viruses, their structure, and their replication inside host cells	Defective viruses, Pseudovirion , Virioids). Bacteriophage .		
4+3	4	Identifying viruses and their diseases: Studying the main viruses that cause various diseases in humans, such as influenza, HPA, coronavirus, and others	Viral Replication, Viral Genetic, Viral Pathogenesis, Laboratory Diagnosis, viral immunity	Cooperative learning	Discussion
6+5	4	Endocytosis and Transmission Mechanisms : Understanding how viruses enter the body, the mechanisms of transmission, and the ways in which diseases spread	Enveloped DNA viruses (Herpes viruses , Pox viruses (	Multimedia teaching: combining images, video, audio, and text to present material in a more interactive and engaging way	- Report Preparation
7	2	Diagnostic	Non-Enveloped DNA	Exploratory	- Daily

		and Monitoring Methods: Learn about laboratory methods and techniques used to diagnose viruses, including laboratory tests and modern .techniques	viruses (Adeno and Parvo viruses (	method: Encouraging students to explore concepts on their own through experiments and interactions, rather than relying solely on	Exam
8	2	Diagnostic and Monitoring Methods: Learn about laboratory methods and techniques used to diagnose viruses, including laboratory tests and modern .techniques	Hepatitis viruses	Diverse assessment methods: Using tests, projects, and practical work to assess students' understanding and skills .development	- Group Discussion
9	2	Prevention and control: The study of strategies to prevent viral	Human Immune Deficiency virus	Self-directed learning: Encouraging students to learn	- Oral Exam

		diseases, such as vaccination, hygiene measures, and infection control practices		independently through independent sources and self-assessment	
10	2	Principles of treatment and intervention: Understanding therapeutic approaches, such as antivirals, and their importance in managing viral diseases	Orthomyxoviruses	Project-based learning: Students work on long-term projects that require research, planning, and implementation, stimulating critical thinking and innovation	-Discussion
11	2	Principles of treatment and intervention: Understanding therapeutic approaches, such as antivirals, and their importance in managing viral diseases	Paramyxoviruses	Self-directed learning: Encouraging students to learn independently through independent sources and self-assessment	- Group Report Preparation
12	2	Clinical and epidemiological significance:	Corona viruses , Rabies virus	Project-based learning: Students work on long-term	Discussion

		analysis of the impact of viruses on public health, and the importance of epidemiological studies in combating the .spread		projects that require research, planning, and implementation, stimulating critical thinking and .innovation	
14+13	4	Research and Development: To enhance students' understanding of the latest developments and technologies in the field of virus research and related biotechnology .	Non Enveloped RNA (Rota, polio), Oncogenic viruses	Student-centered education: where the student is the focus of the learning process, and activities and resources are designed according to their needs .and level	-Oral exam
15	2	Principles of treatment and intervention: Understanding therapeutic approaches, such as antivirals, and their importance in managing .viral diseases	Antiviral drugs, viral vaccine	Self-directed learning: Encouraging students to learn independently through independent sources and self- .assessment	- Report Preparation

Syllabus of Practical part for Medical virology

1	4	Understanding the structure and biology of viruses : Learn the characteristics of viruses, their structure, and their replication inside host cells	Laboratory safety guidelines and aseptic techniques	Active learning: Students are actively involved in the learning process through activities such as discussions, educational games, and practical experiments	-Oral quiz -lab. Work skills
2	4	Identifying viruses and their diseases: Studying the main viruses that cause various diseases in humans, such as influenza, HPA, coronavirus, and others	Specimen Collection, Transport and Storage	Cooperative education: Where students work in groups to solve problems or discuss specific topics, which promotes interaction and learning from each other	Discussion -lab. Work skills
3	4	Endocytosis and Transmission Mechanisms : Understanding how viruses enter the body, the mechanisms of	Direct viral examination (Light Microscopy, Electron Microscopy Examination	Multimedia teaching: combining images, video, audio, and text to present material in a more interactive and engaging way	-Quiz -lab. Work skills

		transmission, and the ways in which diseases .spread			
4	4	Diagnostic and Monitoring Methods: Learn about laboratory methods and techniques used to diagnose viruses, including laboratory tests and modern .techniques	Isolation and cultivation of viruses	Exploratory method: Encouraging students to explore concepts on their own through experiments and interactions, rather than relying solely on	-Explanation -lab. Work skills
5	4	Diagnostic and Monitoring Methods: Learn about laboratory methods and techniques used to diagnose viruses, including laboratory tests and modern	Complement Fixation test	Diverse assessment methods: Using tests, projects, and practical work to assess students' understanding and skills .development	-Writing skills -lab. Work skills

		.techniques			
6	4	Prevention and control: The study of strategies to prevent viral diseases, such as vaccination, hygiene measures, and infection control .practices	Virus Neutralization test	Self-directed learning: Encouraging students to learn independently through independent sources and .self-assessment	-Discussion -lab. Work skills
7	4	Principles of treatment and intervention: Understanding therapeutic approaches, such as antivirals, and their importance in managing .viral diseases	Hemagglutinationtest	Project-based learning: Students work on long-term projects that require research, planning, and implementation, stimulating critical thinking .and innovation	-Discussion -lab. Work skills
8	4	Principles of treatment and intervention: Understanding therapeutic approaches, such as antivirals, and their importance in managing viral .diseases	Hemagglutinationinhibition test	Self-directed learning: Encouraging students to learn independently through independent sources and .self-assessment	-Oral quiz -lab. Work skills

9	4	Clinical and epidemiologic al significance: Analysis of the impact of viruses on public health, and the importance of epidemiologic al studies in combating the .spread	Radioimmunoassay (RIA (	Project-based learning: Students work on long-term projects that require research, planning, and implementation, stimulating critical thinking .and innovation	-Reports -lab. Work skills
10	4	Research and Development: To enhance students' understanding of the latest developments and technologies in the field of virus research and related biotechnology .	ELISA test	Student-centered education: where the student is the focus of the learning process, and activities and resources are designed according to their needs and .level	-Oral quiz -lab. Work skills
11	4	Principles of treatment and :intervention Understand therapeutic approaches, such as antivirals, and	Immunofluorescence test	Self-directed learning: Encouraging students to learn independently through independent sources and	

		their importance in managing .viral diseases		.self-assessment	
12	4	Understanding the structure and biology of viruses : Learn the characteristics of viruses, their structure, and their replication inside host .cells	Western Blot test	Active learning: Students are actively involved in the learning process through activities such as discussions, educational games, and practical .experiments	-Discussion -lab. Work skills
13	4	Identifying viruses and their diseases: Studying the main viruses that cause various diseases in humans, such as influenza, HPA, coronavirus, and .others	PCR (Conventional PCR (	Cooperative learning: Students work in groups to solve problems or discuss specific topics, which promotes interaction and learning from .each other	-Reports -lab. Work skills
14	4	Endocytosis and Transmission Mechanisms : Understanding how viruses enter the body, the	Real Time-PCR	Multimedia teaching: combining images, video, audio, and text to present material in a more interactive	-Evaluation of team work -lab. Work skills

		mechanisms of transmission, and the ways in which diseases spread		and engaging way	
15	4	Diagnostic and Monitoring Methods: Learn about laboratory methods and techniques used to diagnose viruses, including laboratory tests and modern techniques	In Situ Hybridization Technique	Exploratory method: Encouraging students to explore concepts on their own through experiments and interactions, rather than relying solely on	-Oral quiz -lab. Work skills

11. Course Evaluation

The following evaluation methods are adopted:

- 1-Daily Preparatory Tasks
- 2- Daily Exams
- 3- Oral Exams
- 4-Monthly Exams
- 5- Final Exams
- 6- Reports

Distribution of grades:

1. Daily preparation: 20%
2. Daily exams: 20%
3. Oral exams and reports: 5%

4. Monthly exams: 25%

5. Final exam: 30%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Christopher J. Burrell, Colin R. Howard and Frederick A. Murphy . Text book of Medical Virology, Fifth Edition (2016) 2- L. R. Haaheim, J. R. Pattison and R. J. Whitley. A Practical Guide to Clinical Virology. Second edition (2002).
Recommended books and references (scientific journals, reports...)	• Journal of Virology • "Medical Microbiology" Patrick R. Murray ,Ken S. Rosenthal, Michael A. Pfaller: • "Virology: Principles and Applications"
Electronic References, Websites	• PubMed • Google Scholar • Centers for Disease Control and Prevention (CDC) • World Health Organization (WHO)

Academic description of Medical virology
- Third Stage

Signature :

Name :**Maytham Khazal Kazim**

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Immunology1

1. Course Name:	
Immunology (1)	
2. Course Code:	
MTML3106	
3. Semester / Year:	
(course 5/3)	
4. Description Preparation Date:	
2025-2026	
5. Available Attendance Forms:	
Face to face	
6. Number of Credit Hours (Total) / Number of Units (Total):	
30 hr. Theoretical lectures, 60 hr. practical lectures. / 4 Units	
7. Course administrator's name (mention all, if more than one name)	
Assist Lecturer: Hind Abbas Mishaan E: Hand.Abbas@alayen.edu.iq	
8. Course Objectives	
Course Objectives	General Objective: To identify: 1. The definition, components, and characteristics of the immune system. 2. Antibodies and antigens, their properties, and types. 3. The immune response, its types, and effectiveness. Specific Objectives: By the end of the academic year, the student will be able to understand and comprehend: 1. The definition of immunology, its relationship with other sciences, and their importance to medical laboratory technology students. 2. The components of the immune system, including cells and primary and secondary lymphoid organs. 3. The concept of innate and acquired immunity, as well as humoral and cellular factors. 4. The relationship between humoral and cellular components, and the biology of the immune response. 5. The development and formation of blood cells, immune cells and primary and secondary immune organs. 6. The effectiveness of the immune response against antigens (bacteria and viruses).
9. Teaching and Learning Strategies	
Strategy	☐ Present the scientific content using a Data Show. ☐ Use the whiteboard and marker as a teaching aid.

☐ Use relevant images and videos on the Data Show.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	Ability to understand the immune system	Introduction of the immune system, innate and adaptive immunity	interactive-visual	Oral quiz
2	2	Knowing the immune system organs and cells in detail, understanding how immune cells are formed, and understanding phagocytosis.	Cells and organs of the immune system, Hematopoiesis, phagocytosis, lymphoid tissues	interactive-visual	Oral quiz
3	2	Knowing the immune system organs and cells in detail, understanding how immune cells are formed, and understanding phagocytosis.	Cells and organs of the immune system, Hematopoiesis, phagocytosis, lymphoid tissues	interactive-visual	Discussions
4	2	Understanding the antigen, its definition, parts, and classification	Antigen, definition, properties, B-cell, and T-cell epitopes, superantigen, haptens, and adjuvants.	interactive-visual	Oral quiz
5	2	Understanding the antigen, its definition, parts and classification	Antigen, definition, properties, B-cell and T-cell epitopes, superantigen, haptens, and adjuvants.	interactive-visual	Oral quiz
6	2	Definition of antibody, its	Antibody: definition,	interactive-visual	Report

		types, properties, and monoclonal antibodies	structures, classes, properties, and monoclonal Ab formation.		
7	2	Education methods of creating antibodies (laboratory manufacturing)	Generation of antibody diversity.	interactive-visual	Oral quiz
8	2	Education methods of creating antibodies (laboratory manufacturing)	Generation of antibody diversity.	interactive-visual	Oral quiz
9	2	See and understand T cell receptors, their types, classification, and CDR determination	T- cell receptors: structure, organization, rearrangement, complementarity determining regions (CDR)	interactive-visual	Oral quiz
10	2	See and understand T cell receptors, their types, classification, and CDR determination	T- cell receptors: structure, organization, rearrangement, complementarity determining regions (CDR)	interactive-visual	group quiz
11	2	Remember TCR activation and memory activation	T-Cell Activation, Helper Subset Differentiation, and Memory.	interactive-visual	Oral quiz
12	2	Remember BCR maturation and memory formation	B-Cell Activation, Differentiation, and Memory Generation.	interactive-visual	Oral quiz
13	2	Evaluate Immune response, its types, activation, and knowing the response by creating an	Immune response: types, activation, humoral and cell-mediated immune response	interactive-visual	Oral quiz

		antibody or activating the immune cell that is antibody to the particle			
14	2	Evaluate Immune response, its types, activation, and knowing the response by creating an antibody or activating the immune cell that is antibody to the particle	Immune response: types, activation, humoral and cell-mediated immune response	interactive-visual	Oral quiz
15	2	Knowing and understanding bacterial immunity and fighting the resulting infections	Bacterial Immunity, anti- virulence mechanism, Evade Host Defense Mechanisms, and Viral Immunity, Defense Mechanisms.	interactive-visual	Oral quiz
Syllabus of The Practical Course					
1	2	How to collect serums	Collection of the blood specimen, preparation of R.B. Cs suspension.	interactive-visual	Oral-written quiz-practical application
2	2	Methods on how to collect blood samples and determine blood types	Collection of the blood specimen, preparation of R.B. Cs suspension.	interactive-visual	Oral-written quiz-
3	2	Methods for determining concentration, dilution and determining the effectiveness of antibodies	Normality, Dilution, and Titration methods.	interactive-visual	Oral-written quiz-practical application

4	2	How to prepare antigen and bacterial antigen RBCs	Antigen preparation, bacterial Ag, R.B. Cs Ag, protein Ag.	interactive-visual	Oral-written quiz-practical application
5	2	How to prepare antigen and bacterial antigen RBCs	Antigen preparation, bacterial Ag, R.B. Cs Ag, protein Ag.	interactive-visual	Oral-written quiz-
6	2	Learn how to vaccinate animals (mice, rabbits, rats) to stimulate immunity and produce antibodies	Immunization of laboratory, animal heart puncture.	interactive-visual	Oral-written quiz-practical application
7	2	Benefit from studying natural antibodies found in serums.	Natural antibodies study.	interactive-visual	Oral-written quiz-practical application
8	2	Action conclusion the effect of the supplement against bacteria	Effect of complement against bacteria.	interactive-visual	Oral-written quiz-practical application
9	2	Learn the effect of the supplement against bacteria	Effect of complement against bacteria.	interactive-visual	Oral-written quiz-practical application
10	2	Antibody-antigen interaction	Ag – Ab reaction: Agglutination test.	interactive-visual	Oral-written quiz-practical application
11	2	Apply Widal test, Rose – Bengal test	Anti – Bacterial immunity: Widal test, Rose – Bengal test.	interactive-visual	Oral-written quiz-

					practical application
12	2	Apply Widal test, Rose – Bengal test	Anti – Bacterial immunity: Widal test, Rose – Bengal test.	interactive-visual	Oral-written quiz-practical application
13	2	Analyze Weil-Felix test, VDRL test.	Weil-Felix test, VDRL test.	interactive-visual	Oral-written quiz-practical application
14	2	Analyze Weil-Felix test, VDRL test.	Weil-Felix test, VDRL test.	interactive-visual	practical application
15	2	Understand Blood grouping test	Blood grouping test	interactive-visual	Oral-written quiz-

11.Course Evaluation

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

The following evaluation methods are adopted:

1. Writing a report at the end of the course.
2. Oral quizzes.
3. Monthly exams.
4. Final course exam.

Distribution of grades:

1. 3 grade for the Report
2. 2 grades for the Oral Quizzes
- 3.The grades of Monthly exams are 40(20 Marks for the theoretical exam, and 15 for the practical one)
- 4.The grade of the final exam is 60(25 for practical, and 35 for the Theoretical one)

12.Learning and Teaching Resources

Required textbooks (curricular books, any)	
Main references (sources)	- Nature - Springer
Recommended books and references (scientific journals, reports...)	1. Immunology/ Kuby8th ed. 2. Essentials of clinical immunology / Helen Chapel....7th ed.

	3. Practical Immunology / Hudson & Hay 4th ed.
Electronic References, Websites	- PubMed - Google Scholar - Google Geminin

Academic description of: Immunology1

Stage: 3rd

Signature:

Name: Hind Abbas Mishaan

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Medical genetics 1

1. Course Name :	
Medical Genetics1	
2. Course Code:	
MTML3105	
3. Semester / Year:	
Fifth semester / Third studied year	
4. Description Preparation Date:	
2025 - 2026	
5. Available Attendance Forms:	
Direct Theoretical and practical lectures	
6. Number of Credit Hours (Total) / Number of Units (Total):	
72 hours / Course (24 hour theoretical part+ 48 hour / week practical part).	
7. Course administrator's name (mention all, if more than one name)	
Name: Safaa Hussein Abdullah Email:Safaa.hussien@alayen.edu.iq	
8. Course Objectives	
Course Objectives :	The students able to : - Define the medical genetic and cellular division and their important - Known the human genetic material (DNA), their composition, and bind each one to other. - Understand chromosome building up and their type. - Known the chromatin and the difference between the Euchromatin and Heterochromatin. - Numerical and structural abnormalities chromosome. - Known the genetic relationship between chromosome and genetic diseases. - Building family pedigree. - Known the laboratory tests that used in genetic study.
9. Teaching and Learning Strategies	

Strategy	• Increase the students with basic information about genetic materials and composition. • Training the students theoretically and practically about Cytogenetic. • Apply the theoretical subjects in practical lab. • Demand the students to known signs of genetic disorders, and how they happen.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Medical genetics 1					
1	2 hours theoretical	Understand lec.	Introduction to Medical genetics	Theoretical lec.	- Attend - Quiz
2	2 hours theoretical	Remember lec.	Cell division, Mitosis and Meiosis	Theoretical lec.	- Attend - Oral quiz
3	2 hours theoretical	Analyze lec.	Cell cycle and checkpoint	Theoretical lec.	- Attend - Quiz
4	2 hours theoretical	Develop lec.	DNA as human genetic material, and DNA structure	Theoretical lec.	- Attend - Quiz
5	2 hours theoretical	Understand lec.	Chromosome structure and karyotyping	Theoretical lec.	- Attend - Quiz
6	2 hours theoretical	Clarify lec.	Euchromatin, Heterochromatin and nucleosome	Theoretical lec.	- Attend - Quiz
7	2 hours theoretical	Understand lec.	Chromosome replication and segregation	Theoretical lec.	- Attend - Quiz
8	2 hours theoretical	Classify lec.	Chromosome abnormalities	Theoretical lec.	- Attend - Quiz
9	2 hours theoretical	Define lec.	Some of human genetic disease	Theoretical lec.	- Attend - Quiz
10	2 hours theoretical	Understand lec.	The genetic basis of sex linked inheritance	Theoretical lec.	- Attend - Quiz
11	2 hours theoretical	Understand lec.	Another type of gene inheritance	Theoretical lec.	- Attend - Quiz
12	2 hours theoretical	Draw lec.	Family pedigree, symbols	Theoretical lec.	- Attend - Oral quiz
13	2 hours theoretical	Understand lec.	Pattern of inheritance Mendel's laws	Theoretical lec.	- Attend - Quiz
14	2 hours theoretical	Understand lec.	Dominant inheritance	Theoretical lec.	- Attend - Quiz
15	2 hours theoretical	Understand lec.	Recessive inheritance	Theoretical lec.	- Attend - Quiz
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Syllabus of practical part for Medical genetics 1

1	2 hours practical	Understand lec.	Instruments and materials used in medical genetics field	- Practical Lec.	- Attend
2	2 hours practical	Remember lec.	Laboratory safety	- Practical Lec.	- Attend
3	2 hours practical	Analyze lec.	Cell division	- Practical Lec. - Videos	- Attend - Discussion
4	2 hours practical	Develop lec.	Sampling	- Practical Lec.	- Attend - Quiz
5	2 hours practical	Understand lec.	Banding (type of banding)	- Practical Lec. - Videos	- Attend - Quiz
6	2 hours practical	Clarify lec.	Karyotyping	- Practical Lec. - Videos	- Attend - Discussion
7	2 hours practical	Define lec.	Numerical chromosomal abnormalities	- Practical Lec.	- Attend - Quiz
8	2 hours practical	Define lec.	Structural chromosomal abnormalities	- Practical Lec.	- Attend - Quiz
9	2 hours practical	Drew lec.	Family pedigree	- Practical Lec.	- Attend - Quiz
10	2 hours practical	Understand lec.	DNA extraction (manual)	- Practical Lec. - Videos	- Attend - Discussion
11	2 hours practical	Understand lec.	DNA extraction (kit)	- Practical Lec.	- Attend - Quiz
12	2 hours practical	Understand lec.	Extraction of DNA from blood	- Practical Lec. - Videos	- Attend - Discussion -Experiment
13	2 hours practical	Understand lec.	Extraction of DNA from different human cell	- Practical Lec. - Videos	- Attend - Quiz
14	2 hours practical	Understand lec.	Gel electrophoresis	- Practical Lec. - Videos.	- Attend - Discussion -Experiment
15	2 hours practical	Read results	Read results of DNA extraction by electrophoresis	- Practical Lec. - Videos	- Attend - Discussion - Read results

11. Course Evaluation

The following evaluation methods are adopted:

- 1.Theoretical and practical quiz.
- 2.Attendance and discussion.
- 3.The experiments.

Distribution of grades:

- 1.Monthly examination for theoretical lectures (20 marks).

- 2.(5 marks) for activation and attendance.
- 3.Monthly examination for practical lectures (15 marks).
- 4.Total marks for Medical genetics 1 is (40 marks).
- 4.Final distribution examination marks as (35 marks) for theoretical and (25 marks) for practical, and the final marks for Medical genetics 1 is (100 marks).

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Jorde,L.B.;Carey,J.C&Bamshad,M.J.(2019).Medical genetics.Sixth Edition, june 1.
Main references (sources)	Genetics analysis and principle eight edition by Robert J. Brooker.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.ncbi.nlm.nih.gov .

Academic description of Medical genetics 1 – Third stage

Signature :

Name : Safaa Hussein Abdullah

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Hematology 1

1. Course Name :					
Hematology (1)					
2. Course Code:					
MTML3102					
3. Semester / Year:					
Fifth course /Third stage (5/3)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hour for theoretical +60 hours for practical)/3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Murhaf Lahlah			Email: murhaflahlah@gmail.com		
8. Course Objectives					
Course Objectives : Providing the student with a comprehensive and modern understanding of hematology, the normal and abnormal ranges of blood components, and the changes that occur with various diseases					
9. Teaching and Learning Strategies					
Strategy		• Discussion • Brainstorming • Team work			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Hematology 1					
1	2	Training students to conduct examinations and analyses,	Introduction to hematology	Laboratory and computer equipment	Various quizzes and classroom activities

		give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.			
2	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Hemopoiesis (blood cell formation)	Laboratory and computer equipment	Various quizzes and classroom activities
3	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Erythropoiesis (Red blood cell formation)	Laboratory and computer equipment	Various quizzes and classroom activities
4	2	Training students to	Hemoglobin (structure, synthesis and levels in blood)	Laboratory and	Various quizzes and

		conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.		computer equipment	classroom activities
5	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Anemia	Laboratory and computer equipment	Various quizzes and classroom activities
6	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the	Microcytosis& iron deficiency anemia	Laboratory and computer equipment	Various quizzes and classroom activities

		laboratory.			
7	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Macrocytosis&megaloblastic anemia	Laboratory and computer equipment	Various quizzes and classroom activities
8	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Pernicious anemia	Laboratory and computer equipment	Various quizzes and classroom activities
9	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from	Hemolytic anemias		Various quizzes and classroom activities

		patients and using modern equipment in the laboratory.			
10	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	G.6.P.D deficiency anemia	Laboratory and computer equipment	Various quizzes and classroom activities
11	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Hereditary spherocytosis	Laboratory and computer equipment	Various quizzes and classroom activities
12	2	Training students to conduct examinations and analyses, give and interpret results, as well as the	Thalassemia	Laboratory and computer equipment	Various quizzes and classroom activities

		skill of collecting samples from patients and using modern equipment in the laboratory.			
13	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Sickle cell anemia	Laboratory and computer equipment	Various quizzes and classroom activities
14	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Aplastic anemia	Laboratory and computer equipment	Various quizzes and classroom activities
15	2	Training students to conduct examinations and analyses,	Polycythemia	Laboratory and computer equipment	Various quizzes and classroom activities

		give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.			
Syllabus of Practical part for Hematology 1					
1	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Blood collection	Laboratory and computer equipment	Various quizzes and classroom activities
2	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Anticoagulant	Laboratory and computer equipment	Various quizzes and classroom activities

3	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Normal value of all blood components according to age	Laboratory and computer equipment	Various quizzes and classroom activities
4	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Hb estimation by different methods	Laboratory and computer equipment	Various quizzes and classroom activities
5	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and	Packed cell volume PCV	Laboratory and computer equipment	Various quizzes and classroom activities

		using modern equipment in the laboratory.			
6	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	RBCs count (manual) and automated RBCs count	Laboratory and computer equipment	Various quizzes and classroom activities
7	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Red cell indices MCV , MCH , MCHC	Laboratory and computer equipment	Various quizzes and classroom activities
8	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of	Blood film preparation	Laboratory and computer equipment	Various quizzes and classroom activities

		collecting samples from patients and using modern equipment in the laboratory.			
9	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Study of red cell morphology in health and disease	Laboratory and computer equipment	Various quizzes and classroom activities
10	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Inclusion bodies in red blood cells	Laboratory and computer equipment	Various quizzes and classroom activities
11	4	Training students to conduct examinations and analyses, give and	Osmotic fragility test and reticulocyte count	Laboratory and computer equipment	Various quizzes and classroom activities

		interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.			
12	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Sickle cell test	Laboratory and computer equipment	Various quizzes and classroom activities
13	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Hb electrophoresis	Laboratory and computer equipment	Various quizzes and classroom activities
14	4	Training students to conduct	Erythrocyte sedimentation rate	Laboratory and computer	Various quizzes and classroom

		examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.		equipment	activities
15	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Revision	Laboratory and computer equipment	Various quizzes and classroom activities

11. Course Evaluation

The following evaluation methods are adopted:

- 1-Daily preparation
- 2-Daily oral exam
- 3-Monthly exam
- 4-Final exam
- 5-reports

Distribution of grades:

- 1. 20 St1
- 2. 20St2
- 3. 60 Final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1. Hoffbrand's essential hematology. A. Victor Hoffbrand and Paul A.H. Moss , 7th edition , Wiley Blackwell (2016). 2. Hematology in clinical practice. Roberts. S. Hillman and Kenneth A , 5th edition , McGraw Hill Lange medical books (2011).
Recommended books and references (scientific journals, reports...)	3. Dacie and Lewis Practical hematology. S. Mitchell. Lewis and Barbara J. Bain, 10th edition , Churchill Livingstone Elsevier (2006).
Electronic References, Websites	www.google.com www.science direct.com

Academic description of Hematology 1 - Third Stage

Signature :

Name : Ass. Prof. Murhaf Lahlah

جامعة العين العراقية - كليات صحية وطبية
نموذج وصف المقرر لمادة علم الفطريات الطبية

1. اسم المقرر: علم الفطريات الطبية

2. رمز المقرر: MTML3203b

3. الفصل/ السنة : فصلي

4. تاريخ إعداد هذا الوصف 2026/2025

5. أشكال الحضور المتاحة : حضوري

6. عدد الوحدات الدراسية (الكلي)/ عدد الوحدات (الكلي) : 2 ساعة نظري

7. اسم القضاء المقرر (إذا أكثر من اسم يمنع)

الاسم : ميثم خزعل كاظم الايميل : maythambio@gmail.com

8. اهداف المقرر

- فهم تركيب الفطريات وبيولوجيتها : تعلم خصائص الطيات ، تركيبها، وتكاثرها د الخلايا المحلية
- التعرف على أنواع الفيات الخاصة بها : دراسة الفيات الرئيسية التي تشمل الأمرا المختلفة للبشرة.
- سجل التقام والانتقال: فهم كيفية الفطريات إلى الجسم، سجل الانتقال، والطرق التي يمكن دخولها من اكتشاف الأمراض.
- طرق التشخيص والمراقبة: التحكم في السرعات المعملية والتقنيات المستخدمة تشخيص الفطريات ، بما في ذلك الاختبار الحديث المخبرية والتقنيات.
- عن: دراسة الجدوى من الأمراض الفيات ، مثل التطعيم الصحي، وممارسات مكافحة العدوى.
- مبادئ العلاج والتدخل: فهم الأدوية العلاجية، مثل مضادات الفيات طريات ، وأهميتها إدارة الأمراض الفطريات .
- الأهمية والوبائية: تحليل آثار الفيات في الصحة العامة، وأهمية الدراسات الوبائية مكافحة العدوى.
- البحث والتطور: نظام تحسين فهم الطلاب لأحدث التقنيات في مجال الفطريات

اهداف المادة الدراسية

9. أسباب التعلم والتعليم والتعلم

- **التعليم التعاوني:** حيث يعمل الطالب في حل مجموعات المشكلات أو مناقشة موضوعات معينة، مما يؤدي إلى خلق التفاعل والتعلم من الجماعي.
- **التعلم:** يتم من خلاله مشاركة الطلاب بشكل فعال في التفاعلات التعليمية من خلال المناقشات، والألعاب التعليمية، والتجارب العملية.
- **يحتوي التعليم على المشروعات:** حيث يعمل المدرس على المشاريع الطويلة ومتطلبات البحث والتخطيط والتنفيذ، مما يحفز التفكير الإيجابي الجديد.
- **طريقة الاستكشاف:** تشجيع الطلاب على استكشاف المفاهيم بأنفسهم من خلال الروابط والتفاعلات، الأفضل من الاعتماد فقط
- **التعليم بالمحاكاة والألعاب:** استخدام تقنيات الألعاب لمحاكاة الواقع الواقعي، مما يزيد من دافعية الطلاب ويعزز التعلم العملي.
- **التعليم الإلكتروني والتعليم عن بعد:** استخدام التكنولوجيا والنصوص الرقمية لمصادر متنوعة ومتنوعة للطلاب في أماكن مختلفة.
- **التعليم المتمركز حول الطالب:** حيث يكون الطالب هو المحور التعليمي، وهو ذو أهمية خاصة لأساسياته ومستواه.
- **التعليم الذاتي:** تشجيع الاعتماد على الذات في التعلم من خلال الأفكار والتقييم الذاتي.
- **التعليم باستخدام الوسائط المتعددة:** دمج الصور، الفيديو، الصوت، والنصوص المقدمة المادة بشكل أكثر تفاعلية جاذبية.
- **أسباب التقييم المتنوعة:** استخدام الفريق، والمشاريع، المهارات التطبيقية حتى يتم فهم مهارات الطلاب وتطويرهم.

استراتيجي

10. بنية المقرر

تفاصيل المقررات لمادة

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
2+1	4	فهم تركيب الف طريات وبيولوجيتها : تعلم خصائص الطيات ، تركيبها، وتكاثرها داخل الخلايا المحلية	تاير طفل ملء في فتمدقم تايناو وخيرات، تبيطلا .تبيطلا تاير طفل ملء	التعلم: يتم من خلاله مشاركة الطلاب بشكل فعال في التفاعلات التعليمية من خلال المناقشات، والألعاب التعليمية،	الإجراءات التحضيرية اليومية: يتم تقديرها على حضور الطالب وجهوده في التحضير اليومي للمحاضرات، مع تخصيص نسبة معينة من الدرجة الأولى.

	والتجارب العملية.				
4+3	4	التعرف على أن الفطريات الخاصة به دراسة الفطريات الرئيسة التي تشمل أمرا مختلفة	فينصتلاو لكشتلا مـء	التعليم التعاوني: حيث يعمل الطالب في حل مجموعات المشكلات أو مناقشة موضوعات معينة، مما يؤدي إلى خلق التفاعل والتعلم من الجماعي.	الاختبارات الشفوية: من خلال مناقشات أو أسئلة شخصية، تساعد على تحسين مهارات التواصل وفهم المادة، وتأخذ في الاعتبار التقييم الكلي
6+5	4	سجل التقام والانتقال: فهم كيفية الفطريات إلى الجسم، سجل الانتقال، والطرق التي لا يمكن دخولها من اكتشاف الأمراض.	تبيسلا تايرطفا رثاكت ضار ملأ.	التعليم باستخدام الوسائط المتعددة: دمج الصور، الفيديو، الصوت، والنصوص المقدمة المادة بشكل أكثر تفاعلية جاذبية.	التقارير والبحوث: تقديم التقارير أو المشاريع البحثية، احترام قدرة الطالب على البحث والتحليل، ومنحها قيمة محددة من الطبقات.
7	2	طرق التشخيص والمراقبة: التحكم في السرعات العملية والتقنيات المستخدمة في تشخيص الفطريات، بما في ذلك الاختبار الحديث المخبرية	: تيحطسلا تايرطفا تايرطفاو اينيتلا عاونأ ءادوسلا.	طريقة الاستكشاف: تشجيع الطلاب على استكشاف المفاهيم بأنفسهم من خلال الروابط	- امتحانات المراجعة اليومية: يتم بشكل جزئي إجراؤها بدوري خلال فصل مدى استيعاب الطلاب للمحتوى المباشر، دون نسب بنسبة معينة من التقييم.

	والتقنيات.		والفاعلات، الأفضل من الاعتماد فقط	
8	2	طرق التشخيص والمراقبة: التحكم في السرعات المعملية والتقنيات المستخدمة في تشخيص الفطريات ، بما في ذلك الاختبار الحديث المخبرية والتقنيات.	دلجلا تايرطف: Trychophyton spp ، Microsporium spp وEpidermophyton .pp	أسباب التقييم المتنوعة: استخدام الفريق، والمشاريع، المهارات التطبيقية حتى يتم فهم مهارات الطلاب وتطويرهم.
9	2	عن: دراسة الجدوى من الأمراض الفيات ، مثل التطعيم الصحي، وممارسات مكافحة العدوى.	ةعانملا صقدس وريف قيرشبلا	التعليم الذاتي: تشجيع الاعتماد على الذات في التعلم من خلال الأفكار والتقييم الذاتي.
10	2	مبادئ العلاج والتدخل: فهم الأدوية العلاجية، مثل مضادات الفيات طريات ، وأهميتها في إدارة الأمراض الف طريات .	ءاد: دلجلا تحدتايرطفلا تايرطفلاو ميثارجلا.	يحتوي التعليم على المشروعات: حيث يعمل المدرس على المشاريع الطويلة ومتطلبات البحث والتخطيط والتنفيذ، مما يحفز التفكير الإيجابي الجديد.

11	2	مبادئ العلاج والتدبير فهم الأدوية العلاجية، مضادات الفطريات وأهميتها في علاج الأمراض الفطرية	تايرطفا ببسبى ودعلا تايرطف (تيطيخلا تايرطف و مويجلا تايشاشرلا).	التعليم الذاتي: تشجيع الاعتماد على الذات في التعلم من خلال الأفكار والترقيم الذاتي.	الفحوصات الشهرية: درجة شاملة تقيس مستوى التقدم خلال فترة معينة، وتمنح نسبة من الدرجة الممتازة على نتائجها.
12	2	الأهمية والوبائية: تحليل آثار الفيات في الصحة العامة، وأهمية الدراسات الوبائية في مكافحة العدوى.	لهببستي تلى ودعلا تااضيمللا (اد) قريمخلا سكوكتبيركلاو).	يحتوي التعليم على المشروعات: حيث يعمل المدرس على المشاريع الطويلة ومتطلبات البحث والخطيط والتنفيذ، مما يحفز التفكير الإيجابي الجديد.	الاختبارات الشفوية: من خلال مناقشات أو أسئلة شخصية، تساعد على تحسين مهارات التواصل وفهم المادة، وتأخذ في الاعتبار التقييم الكلي.
+13 14	4	البحث والتطور: نظام تحسين فهم الطلاب لأحدث التقنيات في مجال الفيات التكنولوجية الحيوية المتعلقة بها.	: تميزاهنتلا تايرطفا زوليسنبلاو ريسوكيمللا. ي تلى تويحلا تاذاضللا تايرطفا لهجتنت	التعليم المتمركز حول الطالب: حيث يكون الطالب هو المحور التعليمي، وهو ذو أهمية خاصة لأساسياته ومستواه.	الامتحانات اليومية: يتم إجراؤها بشكل قصير بشكل دوري خلال فصل مدى استيعاب الطلاب للمحتوى المباشر، مع ضمان بنسبة معينة من التقييم.
15	2	مبادئ العلاج والتدخل: فهم الأدوية العلاجية، مثل	عاد: تميزاهج تايرطف عادو ايديسكوكللا تايرطفا.	التعليم الذاتي: تشجيع الاعتماد على	الإجراءات التحضيرية اليومية: يتم تقديرها على حضور الطالب وجهوده

مضادات الفيات طريات ، وأهميتها في إدارة الأمراض الف طريات .		الذات في التعلم من خلال الأفكار والتقييم الذاتي.	في التحضير اليومي للمحاضرات، مع تخصيص نسبة معينة من الدرجة الأولى.
فهم تركيب الف طريات وبيولوجيتها : تعلم خصائص الطيات ، تركيبها، وتكاثرها داخل الخلايا المحلية	16	4	التعلم: يتم من خلاله مشاركة الطلاب بشكل فعال في التفاعلات التعليمية من خلال المناقشات، والألعاب التعليمية، والتجارب العملية.
التعرف على أن الفطريات الموجودة بـ دراسة الفطريات الرئي التي تشمل أمرا مختلفة للبشرة مثل.	17	4	التعليم التعاوني: حيث يعمل فريق العمل في مجموعات لحل المشكلات أو مناقشة موضوعات معينة، مما ينتج التفاعل والتعلم من مجموعة الأجزاء.
سجل النقام والانتقال: فهم كيفية الف طريات إلى الجسم، سجل الانتقال، والطرق	18	4	التعليم باستخدام الوسائط المتعددة: دمج الصور،
التقارير والبحوث: تقديم التقارير أو المشاريع البحثية، احترام قدرة الطالب على البحث والتحليل، ومنحها قيمة			

محددة من الطبقات.	الفيديو، الصوت، والنصوص المقدمة المادة بشكل أكثر تفاعلية جاذبية.		التي لا يمكن دخولها من اكتشاف الأمراض.		
- امتحانات المراجعة اليومية: يتم بشكل جزئي إجراؤها بدوري خلال فصل مدى استيعاب الطلاب للمحتوى المباشر، دونسب بنسبة معينة من التقييم.	طريقة الاستكشاف: تشجيع الطلاب على استكشاف المفاهيم بأنفسهم من خلال الروابط والتفاعلات، الأفضل من الاعتماد فقط	لقلنا :تانيعلما مع مج نيزختلاو. قرط تايرطفلا صيخشت تيلمعلا رشابملا يرهجملا صحفلا تيريرسلا تانيعللا.	طرق التشخيص والمراقبة: التحكم في السرعات المعملية والتقنيات المستخدمة في تشخيص الفطريات ، بما في ذلك الاختبار الحديث المخبرية والتقنيات.	4	19
الإجراءات التحضيرية اليومية: يتم تقديرها على حضور الطالب وجهوده في التحضير اليومي للمحاضرات، مع تخصيص نسبة معينة من الدرجة الأولى.	أسباب التقييم المتنوعة: استخدام الفريق، والمشاريع، المهارات التطبيقية حتى يتم فهم مهارات الطلاب وتطويرهم.	تايرطفلا تفاقث.	طرق التشخيص والمراقبة: التحكم في السرعات المعملية والتقنيات المستخدمة في تشخيص الفطريات ، بما في ذلك الاختبار الحديث المخبرية والتقنيات.	4	20
الامتحانات اليومية: يتم إجراؤها بشكل قصير بشكل دوري خلال فصل مدى استيعاب الطلاب للمحتوى المباشر، مع ضمان بنسبة معينة من التقييم.	التعليم الذاتي: تشجيع الاعتماد على الذات في التعلم من خلال الأفكار والتقييم	تيلصملا تارابتخلا تيدلجلاو.	عن: دراسة الجدوى من الأمراض الفيات ، مثل التطعيم الصحي، وممارسات مكافحة العدوى.	4	21

	الذاتي.				
يحتوي التعليم على المشروعات: حيث يعمل المدرس على المشاريع الطويلة ومتطلبات البحث والتخطيط والتنفيذ، مما يحفز التفكير الإيجابي الجديد .	مبادئ العلاج والتدخل: فهم الفيروسات العلاجية، مثل مضادات الفطريات ، وأهميتها في إدارة الأمراض الفيروسية.	Trichophyton spp ، Microsporium spp ، Epidermophyton عاوناً.	4	22	الاختبارات الشفوية: من خلال مناقشات أو أسئلة شخصية، تساعد على تحسين مهارات التواصل وفهم المادة، وتأخذ في الاعتبار التقييم الكلي.
التعليم الذاتي: تشجيع الاعتماد على الذات في التعلم من خلال الأفكار والتقييم الذاتي.	مبادئ العلاج والتدخل: فهم العلاج الطبيعي، مضادات الفطريات وأهميتها في إدارة الأمراض الفطرية .	: قحطسلا تايرطفلا تايرطفلاو اينيتلا عاوناً ءادوسلا.	4	23	الفحوصات الشهرية: درجة شاملة تقيس مستوى التقدم خلال فترة معينة، وتمنح نسبة من الدرجة الممتازة على نتائجها.
يحتوي التعليم على المشروعات: حيث يعمل المدرس على المشاريع الطويلة ومتطلبات البحث والتخطيط والتنفيذ، مما يحفز التفكير الإيجابي	الأهمية والوبائية: اكتشاف الاكتشافات الفطرية في الصحة العامة، وأهمية الدراسات الوبائية في مكافحة العدوى.	لهببستي تلاى ودعلا تااضييملا ءاد) قريمخلا سكوكتبيركلا ءادو)	4	24	الاختبارات الشفوية: من خلال مناقشات أو أسئلة شخصية، تساعد على تحسين مهارات التواصل وفهم المادة، وتأخذ في الاعتبار التقييم الكلي.

	الجديد.				
الامتحانات اليومية: يتم إجراؤها بشكل قصير بشكل دوري خلال فصل مدى استيعاب الطلاب للمحتوى المباشر، مع ضمان بنسبة معينة من التقييم.	التعليم المتمركز حول الطالب: حيث يكون الطالب هو المحور التعليمي، وهو ذو أهمية خاصة لأساسياته ومستواه.	: تميزاهندلا تايرطفلا زوليسنبلاو ريسوكيما.	البحث والتطور: نظام تحسين فهم الطلاب لأحدث التقنيات في مجال الفيات التكنولوجية الحيوية المتعلقة بها.	4	25
الإجراءات التحضيرية اليومية: يتم تقديرها على حضور الطالب وجهوده في التحضير اليومي للمحاضرات، مع تخصيص نسبة معينة من الدرجة الأولى.	التعليم الذاتي: تشجيع الاعتماد على الذات في التعلم من خلال الأفكار والتقييم الذاتي.	عاد: تميزاهجلا تايرطفلا عادو ايديسكو كلا قيمعربلا تايرطفلا	مبادئ العلاج والتدخل: فهم الأدوية العلاجية، مثل مضادات الفيات، وأهميتها في إدارة الأمراض الفيروسية.	4	26
الإجراءات التحضيرية اليومية: يتم تقديرها على حضور الطالب وجهوده في التحضير اليومي للمحاضرات، مع تخصيص نسبة معينة من الدرجة الأولى.	التعلم: يتم من خلاله مشاركة الطلاب بشكل فعال في التفاعلات التعليمية من خلال المناقشات، والألعاب، التعليمية، والتجارب العملية.	عادو امزلا بوتسيهلا عاد سيزوكيمويديسوكارابلا.	فهم تركيب الفطريات وبيولوجيتها: تعلم خصائص الفيات طريا، تركيبها، وتكاثرها داخل الخلايا المضيفة	4	27
الاختبارات الشفوية: من خلال مناقشات أو أسئلة شخصية، تساعد على تحسين مهارات التواصل	التعليم التعاوني: حيث يعمل الطالب في	عادو امزلا ل ماوعلا تارابتخا تايرطفلا قيساسحلا). قيمرطفلا مومسلا لز ع	التعرف على الفترات الخاصة به: دراسة الفطريات الرئيس التي تشمل أمرا مختلفة للبشرة مثل.	4	28

				حل مجموعات المشكلات أو مناقشة موضوعات معينة، مما يؤدي إلى خلق التفاعل والتعلم من الجماعي.	وفهم المادة، وتأخذ في الاعتبار التقييم الكلي
29	4	تدوين الانتقام والانتقال: فهم كيفية الف طري ات إلى الجسم، تسجيل الانتقال، والطرق التي تمنع اكتشاف الأمراض.	زاريميلوبلا ل عاقت تقولاي فل سلسمتلا يقيقحلا	التعليم باستخدام الوسائط المتعددة: دمج الصور، الفديو، الصوت، والنصوص المقدمة المادة بشكل أكثر تفاعلية جاذبية.	التقارير والبحوث: تقديم التقارير أو المشاريع البحثية، احترام قدرة الطالب على البحث والتحليل، ومنحها قيمة محددة من الطبقات.
30	4	طرق التشخيص والمراقبة: التعرف على الأخطاء المعملية والتقنيات المستخدمة في تشخيص الف طري ، بما في ذلك الاختبار المخبرية والتقنيات الحديثة.	يعضوملا نيجهتلا يةيقت	طريقة الاستكشاف: تشجيع الطلاب على استكشاف المفاهيم بأنفسهم من خلال الروابط والتفاعلات، الأفضل من الاعتماد فقط	- امتحانات المراجعة اليومية: يتم بشكل جزئي إجراؤها بدوري خلال فصل مدى استيعاب الطلاب للمحتوى المباشر، دونسب بنسبة معينة من التقييم.
11. تقييم المقرر					

توزيع درجة من 100 على حسب اختياري للطالبات مثل التحضير اليومي والامتحانات اليومية والشفوية والشهرية والتحريرية والتقارير... الخ
تعتمد طرائق التقييم التالية:

- 1- الإجراءات التحضيرية اليومية: يتم تقديرها على حضور الطالب وجهوده في التحضير اليومي للمحاضرات، مع تخصيص نسبة معينة من الدرجة الأولى.
- 2- امتحانات المساء بشكل جزئي: يتم إجراؤها بشكل دوري خلال الفصل بين مدى تغطية برنامج التسجيل للمحتوى المباشر بشكل مباشر، دون نسب بنسبة معينة من التقييم.
- 3- الامتحانات الشفوية: من خلال مناقشات أو أسئلة شخصية، تساعد على تحسين مهارات التواصل وفهم المادة، وتأخذ في الاعتبار ضمن التقييم الكلي.
- 4 - الامتحانات الشهرية: قياس شامل لمستوى التقدم خلال فترة معينة، وتمنح نسبة من الدرجة الممتازة على نتائجها.
- 5- تقديم التقارير والبحوث: تقارير أو مشاريع بحثية، احترام قدرة الطالب على البحث والتحليل، ومنحها قيمة محددة من الطبقات.

توزيع الدرجات :

- 1- التحضير اليومي : 20%
- 2- الامتحانات اليومية : 20%
- 3- الامتحانات الشفوية : 15%
- 4- الامتحانات الشهرية : 25%
- 5- التقارير أو المشاريع : 20%

12. مصادر التعلم والتدريس

نتال.س.كين، موراي.ر. باتريك تأليف "الطبية الدقيقة الأحياء علم". في هذا الكتاب الف طري أت والبكتيريا والفطريات، : بفالر. أ. ومايكل، ومرجعاً أساسياً في علم الميكروبيولوجي الطبي وفينيسا كارتر جون تأليف "والتطبيقات المبادئ: الفطريات علم" يقدم هذا الكتاب الشامل حول علم الف طري ات وتطبيقاته :باسترنالك الطبية.	الكتب المقررة الأساسية (الدروسية التي تم العثور عليها)
ب.مورفي. أ. وفريدريك، هوارد. ر. كولن، بوريل. ج. كريستوفر - ١ (٢٠٠٢) الخامسة الطبعة، الطبي الفيروسات علم عملي دليل. وايتلي جيه وآر، باتيسون آر جيه، هاهيم آر إل - 2 (200) الثانية الطبعة. السريري الفطريات	المراجع الرئيسية (المصادر)
• المجلات العلمية: تاير طفلًا مدعاة لجم: واسعة النطاق و تشمل ما يتعلق بها. Mycology Journal: مجلة مفتوحة المصدر تغطي جميع جوانب علم الفيروسات.	الكتب والمراجع الساندة التي العلمية) المجلات العلمية , التقارير (...)

• التقارير: تقارير منظمة الصحة العالمية (WHO) حول الفيروسات والوبئة. مراكز مراقبة الأمراض الناشئة منها (CDC) والفيروسات الخطيرة.	
تحتوي على بيانات عن مقالات بحثية في مجالات العلوم ببميد الطبية. الأبحاث والدراسات الأكاديمية المتعلقة للبحث سكولار جوجل بالموضوع من خلال تيا ل معلومات (CDC) منها والوقاية الأمراض على السيطرة مراكز موثوقة حول الف طري والأوبئة شامل حول الفيروسات (WHO) العالمية الصحة منظمة والأمراض	المراجع الإلكترونية, مواقع الانترنت

الوصف الأكاديمي لعلم الفطريات الطبية – المرحلة الثالثة

التوقيع :

أسم التدريسي : ميثم خزل كاظم

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Histopathology 2

1.Course Name:	
Histopathology2	
2.Course Code:	
MTML3101	
3.Semester /	
Fifth course / Third stage (5/3)	
4.Description Preparation Date	
2025-2026	
5.Available Attendance Forms:	
In attendance	
6.Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours (30 hours for theoretical + 30 for practical) / 3 Units	
7.Course administrator's name (mention all, if more than one name)	
Name: : Dr. Hajras Shaker Saleh Email: hajsalsaleh@gmail.com	
8.Course Objectives	
Course Objectives	• A knowledge: • - It is to provide an idea and basic informant about histopathology and the diseases they cause and develop the student's ability and skill understanding their pathological analyses. 2- The student learns the skill, how and who diseases are diagnostic - 3- The student learns the skill of conduct pathological examinations and different method diagnosis. Evaluation methods 1- Conducting daily qu exams Quizzes 2- Conducting monthly exams 3- Conducting semester and final exams norms in biological studies • 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.				
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2T + 4 P	The Define Environmental factors and overview; Lifestyle factors	Environmental and Lifestyle-Related Pathology	Lectures and practical lessons -Discussion	Theory exams - practical
2		Describe how the causes of Diseases ; The student learns the who unhealthy diet . Pathogenesis; Laboratory Diagnosis	Nutrition-Related Diseases; Laboratory Diagnosis	Brainstorming	Discussions
3	2T + 4 P	The student learns and Identify the Hereditary disorders and Congenital diseases.	Genetic Diseases: There are several types of genetic abnormalities that affect the structure and function of proteins, disrupting cellular homeostasis and contributing to disease	and Lectures practical lessons -Discussion Brainstorming	Theory exams - practical Discussions
4	2T + 4 P	The student will learn the Nomenclature of Tumors, two types Benign and malignant tumors	Clinical Aspects of Neoplasia: It is a genetic disorder of cell growth that is triggered by acquired or less commonly inherited mutations affecting a single cell	and Lectures practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
5	2T + 4 P	Explain the Cancer is an unregulated proliferation of cells due to loss of normal controls, resulting in unregulated growth, lack of differentiation, local tissue invasion and metastasis.	Molecular Basis of Cancer. Cancer is a collection of diseases characterized by abnormal and uncontrolled growth.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

6	2T + 4 P	The student will learn Categorizing viral infections by the organ system most commonly affected (eg, lungs, GI tract, skin, liver, CNS mucous membranes) can be clinically useful, although certain viral disorders (eg, mumps) Features; Laboratory Diagnosis.	Diseases Caused by Viruses Pathogenicity; Laboratory Diagnostic	Lectures and practical lessons -Discussion Brainstorming	Theory exams practical Discussions
7	2T + 4 P	To identify types of There are many different types of amyloidosis caused by about 30 different amyloid-forming proteins. Most types are systemic, affecting more than one organ or tissue ; symptoms.	Immunopathology Including Amyloidosis: Amyloidosis is the name for a group of disorders where people have proteins that fold in an abnormal way to form fibrils.	- Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
8	2T + 4 P	Interpret the Hereditary disorders and Congenital diseases. Lab. Diagnosis, including microscopic examination.	Genetic Diseases: There are several types of genetic abnormalities that affect the structure and function of proteins, disrupting cellular homeostasis and contributing to disease	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

9	2T + 4 P	To Assess the effectiveness mineral content of aged bones declines, eventually resulting in Osteoporosis a condition in which bones become more fragile and prone to fractures	Bone: As humans age, the rate of bone resorption by osteoclast cells outpaces the rate of bone formation	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
10	2T + 4P	To learn about Multiple factors contribute to the structural integrity of whole bones: the total bone mass, the bone geometry, and the properties of the constituent tissue.	Techniques for analyzing bone	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
11	2T + 4P	Describe the Competence in muscle biopsy evaluation is a core component of neuropathology practice. Lab diagnostic	Neuropathology and Muscle biopsies	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

12	2T + 4P	Define key Skeletal muscle biopsy remains an important investigative tool in the diagnosis of a variety of muscle disorders.	Muscle Biopsies	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical -Discussions
13	2T + 4P	To learn about Molecular pathology represents the application of the principles of basic molecular biology to the investigation of human disease processes. .	Molecular pathology	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical -Discussions
14	2T + 4P	To learn about Techniques are numerous but include quantitative polymerase chain reaction (qPCR), multiplex PCR, DNA microarray, in situ hybridization, in situ RNA sequencing, DNA sequencing, antibody based immunofluorescence tissue assays, molecular profiling of pathogens, Lab diagnosis.	Techniques in Molecular pathology	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical -Discussions
15	2T + 4P		Exam	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical 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. Histology for Pathologists 2. Principle of Medical Physiology
Main references (sources)	Medical Pathology: A Self-instructional T
Recommended books and references (scientific journals, reports...)	1- NCBI 2- PubMed 3- You tube
Electronic References, Websites	American Diabetes Association Professional Practice Committee (2019). "Professional Practice Committee: Standards of Medical Care in Diabetes—2019". Diabetes Care. 42 (Supplement 1): s46–s60. doi:10.2337/dc19-S005.

Academic description of Histopathplogy2 –Third Stage

Signature :

Name :Dr. Hajras Shaker Saleh

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Metabolic disorder

1. Course Name :					
Metabolic disorder					
2. Course Code:					
MTML3204b					
3. Semester / Year:					
Sixth course / Third stage (6/3)					
4. Description Preparation Date:					
2025 - 2026					
5. Available Attendance Forms:					
Face to face					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hours for theoretical + 60 for practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohammed Saad El-Gedamy Email: mselgedamy@mans.edu.eg					
8. Course Objectives					
Course Objectives : The students able to : • Introducing the student to the basic principles related to metabolic disorders in clinical chemistry and familiarizing the student with them. • The curriculum includes topics on the theoretical and practical foundations of laboratory tests in clinical chemistry for metabolic disorders of various diseases, and the introduction of important experiments with modern techniques in laboratory diagnosis, thus giving the student a new opportunity to learn about qualitative tests.					
9. Teaching and Learning Strategies					
Strategy		• Lectures • Discussions • Demonstrations • Lab. Work • E. learning			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Syllabus of Theoretical part for Metabolic disorder

1	2	Define key terms such as water balance, dehydration, over hydration, and homeostasis.	Water Balance and Imbalance	Interactive-visual	Exams and quizzes
2	2	Describe how the kidneys and hormones (e.g., aldosterone, ADH) regulate electrolyte balance.	Electrolytes Balance and Imbalance	Interactive-visual	Exams and quizzes
3	2	Define key terms such as pH, acidosis, alkalosis, buffer systems, and homeostasis.	Acid base Balance	Interactive-visual	Exams and quizzes
4	2	Identify abnormal pH values and interpret arterial blood gas (ABG) results to diagnose acid-base imbalances.	Acid base Imbalance	Interactive-visual	Exams and quizzes
5	2	Explain the role of vitamins, trace elements, and metals in metabolic processes and maintaining homeostasis.	Disorder of vitamins	Interactive-visual	Exams and quizzes
6	2	Assess the effectiveness of therapeutic interventions	Trace elements and metals metabolism	Interactive-visual	Exams and quizzes

		(e.g., supplementation, chelation therapy) in managing disorders of vitamin, trace element, and metal metabolism.			
7	2	Interpret diagnostic tests (e.g., urinalysis, serum creatinine, GFR) to assess kidney function.	Renal disorder	Interactive-visual	Exams and quizzes
8	2	Define key terms such as hepatitis, cirrhosis, fatty liver disease, gallstones, and biliary obstruction.	Liver disorders and gallstones	Interactive-visual	Exams and quizzes
9	2	List the primary functions of the pancreas, including endocrine (insulin, glucagon) and exocrine (digestive enzymes) roles	Pancreatic disorders	Interactive-visual	Exams and quizzes
10	2	List the primary types of lipids (e.g., triglycerides, cholesterol) and their roles in the body.	Disorders of lipid metabolism	Interactive-visual	Exams and quizzes
11	2	Describe the connection between metabolic syndrome and the increased risk of	Metabolic syndrome	Interactive-visual	Exams and quizzes

		cardiovascular disease, type 2 diabetes, and stroke.			
12	2	Explain the biochemical pathways involved in protein, purine, and uric acid metabolism, including the synthesis and degradation of purines and the role of uric acid.	Disorder of protein, Uric acid, gout and purine metabolism	Interactive-visual	Exams and quizzes
13	2	Examine how genetic mutations and environmental factors contribute to the development and exacerbation of porphyria and iron metabolism disorders.	Disorders of haem metabolism: iron	Interactive-visual	Exams and quizzes
14	2	Design a patient management plan for individuals with iron metabolism disorders or Porphyrrias including dietary changes, medications, and lifestyle modifications.	Disorders of haem metabolism: the porphyrias	Interactive-visual	Exams and quizzes
15	2	Describe the	Cardiovascular	Interactive-	Exams and

		pathophysiology of common cardiovascular disorders, including atherosclerosis, myocardial infarction, and heart failure.	disorders	visual	quizes
Syllabus of Practical part for Metabolic disorder					
1	4	Calculate molarity, molality, osmolarity, osmolality, and equivalent for a given solution using appropriate formulas and data.	Estimation of molarity, molality, osmolarity, osmolality and Equivalent	interactive-visual	Oral-written quiz-practical application
2	4	Calculate the concentration of Na ⁺⁺ , K ⁺ , P ⁺⁺ and Ca ⁺⁺ in given samples using appropriate laboratory methods	Estimation of Na ⁺⁺ , K ⁺ , P ⁺⁺ and Ca ⁺⁺	interactive-visual	Oral-written quiz-practical application
3	4	Calculate blood gas values (e.g., pH, pCO ₂ , pO ₂ , HCO ₃ ⁻) based on the measurements obtained from a blood gas analyzer or clinical laboratory.	Estimation of blood gases	interactive-visual	Oral-written quiz-practical application
4	4	Describe the principles behind laboratory techniques used	Estimation of Ze and I	interactive-visual	Oral-written quiz-practical

		for the estimation of zinc and iodine levels.			application
5	4	Calculate creatinine clearance using the appropriate formula (e.g., Cockcroft-Gault formula, Schwartz equation) based on patient data such as serum creatinine, age, weight, and urine volume.	Estimation of urea creatinine, and creatinine clearance	interactive-visual	Oral-written quiz-practical application
6	4	Perform laboratory procedures for the estimation of GOT, GPT, and ALP using spectrophotometric or colorimetric methods.	Estimation of GOT, GPT and ALP	interactive-visual	Oral-written quiz-practical application
7	4	Perform laboratory procedures for the estimation of bilirubin (direct and indirect) using colorimetric or spectrophotometric methods, such as the diazotized sulfanilic acid method.	Estimation of Bilirubin (direct and indirect)	interactive-visual	Oral-written quiz-practical application
8	4	Perform laboratory tests to measure amylase activity in blood or urine samples using methods such as the starch-iodine	Estimation of amylase enzyme	interactive-visual	Oral-written quiz-practical application

		assay, the colorimetric method, or the enzyme activity assay.			
9	4	Identify the laboratory techniques used for the estimation of triglycerides and cholesterol, such as enzymatic assays.	Estimation of triglyceride and cholesterol	interactive-visual	Oral-written quiz-practical application
10	4	Perform laboratory procedures to estimate HDL and LDL cholesterol levels using direct or calculated methods.	Estimation of HDL, LDL and VLDL	interactive-visual	Oral-written quiz-practical application
11	4	Identify the methods used to estimate total protein (e.g., Biuret method) and albumin (e.g., bromocresol green method).	Estimation of total protein and Albumin/Globulin Ratio	interactive-visual	Oral-written quiz-practical application
12	4	Perform laboratory techniques to estimate uric acid levels in blood or urine samples using standard procedures.	Estimation of uric acid	interactive-visual	Oral-written quiz-practical application
13	4	Interpret total iron, TIBC, and transferrin saturation results in the context of specific clinical conditions, such as	Estimation of Total iron and Iron binding capacity	interactive-visual	Oral-written quiz-practical application

		anemia or hemochromatosis.			
14	4	Perform laboratory techniques to estimate HbA1c levels in blood samples using standardized methods.	Estimation of HbA1c and BMI	interactive-visual	Oral-written quiz-practical application
15	4	Identify methods used to estimate these biomarkers, such as spectrophotometric assays for LDH and CK, immunoassays for cardiac troponin, and ELISA for D-dimers.	Estimation of LDH, CK, cardiac troponin and D-Dimers	interactive-visual	Oral-written quiz-practical application

11. Course Evaluation

The following evaluation methods are adopted:

1. Exams
2. Quiz
3. Report
4. Attendance
5. Class Activity
6. Technical Practice

Distribution of grades:

1. Practical Midterm 15%
 2. Theoretical Midterm 25%
 3. Theoretical Final Term 35%
 4. Practical Final Term 25%
- Total 100%

12. Learning and Teaching Resources

Required textbooks (curricular

books, if any)	
Main references (sources)	- Textbook of biochemistry (Sixth Edition) For Medical Students DM Vasudevan, Sreekumari S and Kannan Vaidyanathan. -Clinical Biochemistry Lecture Notes.Tenth EditionHoboken, NJ: Wiley, 2018. Peter Rae. Mike Crane. Rebecca Pattenden. - Biochemistry. Fourth Edition, 2013. Dr. U. Satyanarayana Dr. U. Chakrapani.Elsevier India Private Limited. -Clinical biochemistry &metabolic medicineeighth edition published in 2012 by Hodder Arnold. Professor Martin Andrew Crook. - Textbook of Medical Biochemistry Eighth Edition 2012. MN Chatterjea Rana Shinde.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Academic description of Metabolic disorder - Third Stage

Signature :

Name : Dr. Mohammed Saad El-Gedamy

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Biostatic

1. Course Name :					
Biostatic					
2. Course Code:					
MTML3207					
3. Semester / Year:					
Sixth semester/Third stage					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
60 Hours (15 hours for theoretical + 45 gor practical) /2 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Mohamed Alwan			Email:		
8. Course Objectives					
Course Objectives : The students able to : 1- Identify the concept of inferential and inferential statistics. 2- Identify the null and alternative statistical hypotheses and how to verify them. 3- Identify the differences between statistics. 4- Enabling students to be able to interpret statistical results. 5- Enabling students to be able to distinguish between how to use nonparametric statistics. 6- Enabling students to apply statistical methods appropriately in light of each topic.					
9. Teaching and Learning Strategies					
Strategy	- Explanation and clarification - Lecture method - Student groups - Educational presentations				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Biostatic					
1+2	1	Understand the topic and	Probabilities And Distributions .	Interactive-visual	Exams, Discussions

		know the importance of the test			
3+4	1	Understand the topic and know the importance of the test	Correlation and Regression Analysis (Concept and analysis).	Interactive-visual	Exams, Discussions
5+6	1	Understand the topic and know the importance of the test	Hypothesis Testing: Introduction. Definition of test , level of significance, degrees of freedom, Error type.	Interactive-visual	Exams, Discussions
7-9	1	Understand the topic and know the importance of the test	Z-test and t-test.	Interactive-visual	Exams, Discussions
10	1	Understand the topic and know the importance of the test	Chi-square test.	Interactive-visual	Exams, Discussions
11+12	1	Understand the topic and know the importance of the test	Analysis of Variance (ANOVA).	Interactive-visual	Exams, Discussions
13	1	Understand the topic and know the importance of the test	Questionnaire: Design and Analysis of Questionnaire.	Interactive-visual	Exams, Discussions
14	1	Understand the topic and know the importance of the test	Final Report, Introduction, Statistical Analysis, Discussion Results.	Interactive-visual	Exams, Discussions
15	1	Understand the topic and know the	Revision .	Interactive-visual	Exams, Discussions

		importance of the test			
Syllabus of Practical part for Biostatic					
(1 -2)	3	Understand the topic and know the importance of the test	Elementary Probability Theory.	Interactive-visual	Exams, Discussions
(3-4)	3	Understand the topic and know the importance of the test	Statistical Estimation Theory (Estimation of Population parameters, by Point and by Interval)	Interactive-visual	Exams, Discussions
(5-7)	3	Understand the topic and know the importance of the test	Test of Significant : Degree of freedom, P-Value and level of Significant .Type I and Type I I Errors	Interactive-visual	Exams, Discussions
(8 -9)	3	Understand the topic and know the importance of the test	Different type of t- test	Interactive-visual	Exams, Discussions
10	3	Understand the topic and know the importance of the test	Chi-Square Significance tests.	Interactive-visual	Exams, Discussions
(11-12)	3	Understand the topic and know the importance of the test	One way ANOVA test.	Interactive-visual	Exams, Discussions
(13-14)	3	Understand the topic and know the importance of the test	Simple Correlation Coefficients.	Interactive-visual	Exams, Discussions
(15)	3	Understand the topic and know the	Exam	Interactive-visual	Exams, Discussions

		importance of the test			
11. Course Evaluation					
The following evaluation methods are adopted: 1. Monthly exams 2. Final exam 3. Daily evaluation Distribution of grades: 1. Monthly exam 35 points(15 practical+ 20 theoretical) 2. Daily evaluation 5 points 3. Final exam 60 points (25 practical+ 35 theoretical)					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		المدخل الى الاحصاء للدكتور خاشع الراوي جامعة الموصل 2000 – مبادئ الاحصاء للدكتور خاشع الراوي- نعيم ثتمي المحمد – مؤيد احمد اليونس – زليد خالد المراني			
Main references (sources)		من الكتب المنهجية والكتب المساعدة والانترنت والبحوث العلمية			
Recommended books and references (scientific journals, reports...)		المجلات العلمية في الاختصاصات الاساسية			
Electronic References, Websites		موقع التعليم الالكتروني لجامعة المثنى /https://agr.mu.edu.iq			

Academic description of Biostatic - Third Stage

Signature :

Name :Prof. Mohamed Alwan

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Computer Applications 2

1. Course Name:	
Computer Applications 2	
2. Course Code:	
MTML3208	
3. Semester / Year:	
Fourth semester / second academic year (4/2)	
4. Description Preparation Date:	
2025 -2026	
5. Available Attendance Forms:	
My presence - my description	
6. Number of Credit Hours (Total) / Number of Units (Total):	
90 hours (30 hours theoretical + 60 hours practical) / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Mr. Mahdi Saleh Kazim Email: salhmhdy128@gmail.com	
8. Course Objectives	
Course Objectives	- Introducing the student to computer applications such as the Excel program and learning about its benefits, specifications, and methods of operating and closing it. - Learning how to open a saved file, enter data, perform mathematical operations, and how to adjust and format data. - Helping the student link the information acquired in the lecture and link it to the labor market to keep pace with scientific development.
9. Teaching and Learning Strategies	
Strategy	The learning and teaching strategy is based on the modern interactive method in university education, where the student is a participating member in the scientific information, through acquisition, analysis and dissemination. Theoretical lectures are based on direct classroom interaction between the instructor and the students through presenting the lesson and direct discussion between the instructor and his students on the one hand and between the students themselves on the other hand through presenting mini-research on scientific vocabulary. As for practical lectures, they are based on explaining the program practically to the student, so that he can then try the program himself and work on some special files in the lecture assignments and try new examples to develop his skills and link theoretical information to practical information and record the variables afterwards.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	1	Introduction to SPSS	Introduction to the SPSS program in general	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
2	1	Learn about running and closing the program	Run and close the SPSS program	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
3	1	Mention the steps of statistical analysis in the SPSS program	Steps to analyze data in the program	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
4	1	Understand the components of the home screen and how to enter data	Home screen components and data entry	Theoretical lecture	Exam in the last 10 minutes of the lecture
5	1	Learn about saving and retrieving data and data types	Save and retrieve data and data types	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
6	1	Clarify key terms and sort and switch data	Sort and switch data	Theoretical lecture	Exam in the last 10 minutes of the lecture
7	1	Identify variable and descriptive statistics	Insert a variable or case, descriptive statistics, merge files	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
8	1	Clarify the summary and know the data	Statistical summary of the given data and the use of data	Theoretical lecture	Exam in the last 10 minutes of the lecture
9	1	Introduction to Power Point and how to turn it on and off	Power Point concept , running and closing	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
10	1	How presentations work and what they are useful for	Making presentations and their usefulness	Theoretical lecture	Exam in the last 10 minutes of the lecture

11	1	Clarification of the work of adding fees and modifying	Add graphics with available drawing tools	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
12	1	How to recognize the text and floor modification of the slide	Modify the text and change the color and floor control plan of the slide	Theoretical lecture	Exam in the last 10 minutes of the lecture
13	1	How to add images and zoom in and out	Zoom in, zoom, crop and add natural images	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
14	1	Make and clarify the addition of charts	Add charts from Excel	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.
15	1	How to switch between slides and learn about display commands	View and move between slide commands	Theoretical lecture	Ask a question in the last 10 minutes of the lecture.

Syllabus of The Practical Course

1	2	Introduction to the SPSS program in general	Introduction to SPSS	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
2	2	Learn about running and closing the program	Run and close the SPSS program	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
3	2	Mention the steps of statistical analysis in the SPSS program	Steps to analyze data in the program	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
4	2	Understand the components of the home screen and how to enter data	Home screen components and data entry	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
5	2	Learn about saving and retrieving data and data types	Save and retrieve data and data types	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
6	2	Clarify key terms and sort and switch data	Sort and switch data	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
7	2	Identify variable insertion and descriptive statistics	Insert a variable or case, descriptive statistics, merge files	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.

8	2	Clarify the summary and know the data	Statistical summary of the given data and the use of data	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
9	2	Introduction to Power Point and how to turn it on and off	Power Point concept , running and closing	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
10	2	How presentations work and what they are useful for	Making presentations and their usefulness	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
11	2	Clarification of the work of adding fees and modifying	Add graphics with available drawing tools	Practical lecture through practical application of the term	Exam in the last 10 minutes of the lecture
12	2	How to recognize the text and floor modification of the slide	Modify the text and change the color and floor control plan of the slide	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
13	2	How to add images and zoom in and out	Zoom in, zoom, crop and add natural images	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
14	2	Make and clarify the addition of charts	Add charts from Excel	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.
15	2	How to switch between slides and learn about display commands	View and move between slide commands	Practical lecture through practical application of the term	Ask a question in the last 10 minutes of the lecture.

11. Course Evaluation

The grade is distributed out of 100 over the entire course and the student takes two official university exams. The endeavour is worth 40 points and is divided as follows:

5 points for class participation and attendance

15 points for a written practical exam

20 points for a written theoretical exam

The final is worth 60 points and is divided as follows:

25 points for written practical
35 points for written theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1) Faith Abbey(2022): MY EXCEL GUIDE, Beginners, Intermediate, Advanced, Microsoft Excel.

2) Kevin Pitch(2023) :Excel Guide for Success , Independently published .

3) Aldrich, James . o (2016):Using IBM _ SPSS_Statistics Second Edition .

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

Global Publishers
Microsoft Excel Functions and Formulas with Excel 2019/Office 365

Academic description of **Computer Applications 2 \Third Stage**

Signature :

Name: **Mr. Mahdi Saleh Kazim**

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Immunology 2

1. Course Name:	
Immunology (2)	
2. Course Code:	
MTML3206	
3. Semester / Year:	
(course 6/3)	
4. Description Preparation Date:	
2025-2026	
5. Available Attendance Forms:	
Face to face	
6. Number of Credit Hours (Total) / Number of Units (Total):	
30 hr. Theoretical lectures, 60 hr. practical lectures. / 4 Units	
7. Course administrator's name (mention all, if more than one name)	
Assist Lecturer: Hind Abbas Mishaan E: Hand.Abbas@alayen.edu.iq	
8. Course Objectives	
Course Objectives	General Objective: To identify: 1. The nature, characteristics, diversity, and functions of the components of the immune system. 2. Transplantation and vaccines. 3. Disease conditions associated with the immune system. Specific Objectives: By the end of the academic year, the student will be able to understand and comprehend: 1. The immune systems, including the complement system, histocompatibility, and cytokines. 2. The concept of immune tolerance (central and peripheral) and its mechanism in immune cells. 3. Transplantation, graft rejection, and organ transplantation. 4. Vaccines, their types, benefits, and potential harms. 5. Immune hypersensitivity and its types, autoimmune diseases, immunodeficiency disorders, and tumor immunity.
9. Teaching and Learning Strategies	
Strategy	• Present the scientific content using a Data Show. • Use the whiteboard and marker as a teaching aid. • Use relevant images and videos on the Data Show.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	Learn to define and activate the complement.	Complement: definition, activation, type of activation, complement deficiency, properdin.	interactive-visual	Oral quiz
2	2	Apply the MHC 1 & 2 Their role in presenting antigen to the memory cell	MHC: definition, types, Antigen Presentation and Processing,	interactive-visual	Oral quiz
3	2	Apply the MHC 1 & 2 Their role in presenting antigen to the memory cell	MHC: definition, types, Antigen Presentation and Processing,	interactive-visual	Oral quiz
4	2	Evaluate role of cytokines and mediators in producing cooperation between cells	Cytokines & Mediators.	interactive-visual	Oral quiz
5	2	Remember and understanding the types of allergies 1 2 3 4	Hypersensitivity: types, and diseases that are caused by hypersensitivity.	interactive-visual	Oral quiz
6	2	Remember and understanding the types of allergies 1 2 3 4	Hypersensitivity: types, and diseases that are caused by hypersensitivity.	interactive-visual	Oral quiz
7	2	Improve immune system function Full performance	Tolerance: Central and peripheral, mechanisms, Anergy	interactive-visual	Oral quiz
8	2	Analyze and understanding autoimmunity, its	Autoimmunity: definition, mechanisms, types.	interactive-visual	Oral quiz

		types and how it works			
9	2	Define Organ transplantation of all types from foreign bodies to the same blood type	Transplantation: Introduction, types of graft rejection, immunosuppressive therapy of allograft rejection, immunology of xenogeneic transplantation, and organ transplantation.	interactive-visual	Oral quiz
10	2	Define organ transplantation of all types from foreign bodies to the same blood type	Transplantation: Introduction, types of graft rejection, immunosuppressive therapy of allograft rejection, immunology of xenogeneic transplantation, and organ transplantation.	interactive-visual	Oral quiz
11	2	Apply vaccination process in terms of benefits and harms	Vaccines & Vaccination, definition, types, advantages & disadvantages.	interactive-visual	Oral quiz
12	2	Apply vaccination process in terms of benefits and harms	Vaccines & Vaccination, definition, types, advantages & disadvantages.	interactive-visual	Oral quiz
13	2	Knowledge of acquired and hereditary immunodeficiency	Immunodeficiencies: types, primary and secondary Immunodeficiency.	interactive-visual	Oral quiz
14	2	Remember and knowing cancerous tumors and the role of immunity in fighting cancer	Tumor, Anti-tumor immunity, types, immune defense against tumors.	interactive-visual	Oral quiz

15	2	Remember and knowing cancerous tumors and the role of immunity in fighting cancer	Tumor, Anti-tumor immunity, types, immune defense against tumors.	interactive-visual	Oral quiz
Syllabus of The Practical Course					
1	2	Apply pregnancy and sedimentation test application	Precipitation test. Pregnancy test.	interactive-visual	Oral-written quiz-practical application
2	2	Analyze ASO Analysis Application	Anti- streptolysin -O test	interactive-visual	Oral-written quiz-practical application
3	2	Evaluate Inflammation test application	CRP test	interactive-visual	Oral-written quiz-practical application
4	2	Remember VDRL, RPR test	VDRL, RPR test	interactive-visual	Oral-written quiz-practical application
5	2	Apply Autoimmune Test Application	Antigen preparation, bacterial Ag, R.B.Cs Ag, protein Ag.	interactive-visual	Oral-written quiz-practical application
6	2	Apply Autoimmune Test Application	Autoimmunity: SLE test, RF test.	interactive-visual	Oral-written quiz-practical application
7	2	Application of the method of immune diffusion	Immunodiffusion assay	interactive-visual	Oral-written quiz-practical application
8	2	Learn the method of	Immunoelectrophoresis assay	interactive-visual	Oral-written

		electrophoresis in immunity			quiz-practical application
9	2	Learn the method of electrophoresis in immunity	Immunoelectrophoresis assay	interactive-visual	Oral-written quiz-practical application
10	2	Elisa analysis	Enzyme-linked immunosorbent assay (ELISA). e.g. Anti-citrullinated peptide antibody (ACPA) test.	interactive-visual	Oral-written quiz-practical application
11	2	Elisa analysis	Enzyme-linked immunosorbent assay (ELISA). e.g. Anti-citrullinated peptide antibody (ACPA) test.	interactive-visual	Oral-written quiz-practical application
12	2	How to isolate B T cells	Lymphocyte isolation: T-cell and B-cell.	interactive-visual	Oral-written quiz-practical application
13	2	How to isolate B T cells	Lymphocyte isolation: T-cell and B-cell.	interactive-visual	Oral-written quiz-practical application
14	2	Remember allergy recognition techniques	Hypersensitivity: uses of tests.	interactive-visual	Oral-written quiz-practical application
15	2	Remember allergy recognition techniques	Hypersensitivity: uses of tests.	interactive-visual	Oral-written quiz-practical application

11.Course Evaluation

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

The following evaluation methods are adopted:

1. Writing a report at the end of the course.
2. Oral quizzes.

3. Monthly exams.
4. Final course exam.

Distribution of grades:

1. 3 grades for the writing Report
2. 2 grades for the Oral Quizzes
3. The grades of Monthly exams are 40(20 Marks for the theoretical exam, and 15 for the practical one)
4. The grades of the final exam is 60(25 for practical, and 35 for the Theoretical one)

12. Learning and Teaching Resources

Required textbooks (curricular books, any)	
Main references (sources)	- Nature - Springer
Recommended books and references (scientific journals, reports...)	1. Immunology/ kuby8th ed. 2. <i>Essentials of clinical immunology</i> / Helen Chapel....7th ed. 3. Practical Immunology / Hudson& Hay 3^{ed} ed.
Electronic References, Websites	- PubMed - Google Scholar - Google Geminin

Academic description of: Immunology1

Stage: 3rd

Signature:

Name: Hind Abbas Mishaan

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Medical genetics 2

1. Course Name :	
Medical Genetics2	
2. Course Code:	
MTML3205	
3. Semester / Year:	
Sixth semester / Third studied year	
4. Description Preparation Date:	
2025 - 2026	
5. Available Attendance Forms:	
Direct Theoretical and practical lectures	
6. Number of Credit Hours (Total) / Number of Units (Total):	
78 hours / Course (28 hour theoretical part+ 50 hour / week practical part).	
7. Course administrator's name (mention all, if more than one name)	
Name: Safaa Hussein Abdullah Email:Safaa.hussien@alayen.edu.iq	
8. Course Objectives	
Course Objectives :	The students able to : - Identify the types of mutations, mutagenic substances and mechanism of mutations. - Diagnose genetic diseases genetically. - Know cancers and carcinogenic substances. - Know gene therapy and its types. - Know and understand the tests for proving Prenatal diagnosis. - Know the Human Genome Project.
9. Teaching and Learning Strategies	
Strategy	- Introducing students to cancers and carcinogens. - Training students theoretically, practically and applied to diagnose cancers genetically.

3. Applying the topics studied in theoretical lectures at the practical level.
4. Asking students to learn about Human Genome Project and the reason for its establishment.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Medical genetics 2					
1	2 hours theoretical	Define lec.	Mutation	Theoretical lec.	- Attend - Oral quiz
2	2 hours theoretical	Define lec.	Mutagens	Theoretical lec.	- Attend - Quiz
3	2 hours theoretical	Understand lec.	Single nucleotide polymorphism	Theoretical lec.	- Attend - Quiz
4	2 hours theoretical	Clarify lec.	Identifying diseases gene	Theoretical lec.	- Attend - Quiz
5	2 hours theoretical	Explain lec.	Oncogenes	Theoretical lec.	- Attend - Quiz
6	2 hours theoretical	Understand lec.	Tumor suppressor gene	Theoretical lec.	- Attend - Oral quiz
7	2 hours theoretical	Understand lec.	The genetic of cancer	Theoretical lec.	- Attend - Quiz
8	2 hours theoretical	Classify lec.	Classification of genetic disease	Theoretical lec.	- Attend - Quiz
9	2 hours theoretical	Understand lec.	genetic counselling	Theoretical lec.	- Attend - Quiz
10	2 hours theoretical	Define lec.	Gene therapy	Theoretical lec.	- Attend - Quiz
11	2 hours theoretical	Explain lec.	Immunogenetics	Theoretical lec.	- Attend - Quiz
12	2 hours theoretical	Understand lec.	Stem cell technology	Theoretical lec.	- Attend - Quiz
13	2 hours theoretical	Understand lec.	Prenatal diagnosis	Theoretical lec.	- Attend - Quiz
14	2 hours theoretical	Organize lec.	Human genome project	Theoretical lec.	- Attend - Quiz
15	2 hours theoretical	Understand lec.	microRNA	Theoretical lec.	- Attend - Quiz

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of practical part for Medical genetics 2					
1	2 hours practical	Explain lec.	Extraction of DNA from bacterial infected human and tissue	- Practical Lec.	- Attend Experiment
2	2 hours practical	demonstrate lec.	PCR	- Practical Lec.	- Attend - Quiz
3	2 hours practical	Understand lec.	Conventional PCR	- Practical Lec. - Videos	- Attend Discussion Experiment
4	2 hours practical	Understand lec.	Reverse PCR	- Practical Lec.	- Attend - Quiz
5	2 hours practical	Understand lec.	Multiplex PCR	- Practical Lec. - Videos	- Attend - Quiz
6	2 hours practical	Understand lec.	Real time PCR	- Practical Lec. - Videos	- Attend -Discussion
7	2 hours practical	Apply lec.	Gel electrophoresis	- Practical Lec.	- Attend - Quiz
8	2 hours practical	Evaluate lec.	Gel electrophoresis for different sample size	- Practical Lec.	- Attend -Read result
9	2 hours practical	Understand lec.	Data analysis for genetics analyzer	- Practical Lec.	- Attend - Quiz
10	2 hours practical	Classify lec.	Single nucleotide polymorphism	- Practical Lec. - Videos	- Attend -Discussion
11	2 hours practical	Understand lec.	Primer design	- Practical Lec.	- Attend - Quiz
12	2 hours practical	Understand lec.	Practical Primer design	- Practical Lec. - Videos	- Attend -Discussion
13	2 hours practical	Understand lec.	Sequencing	- Practical Lec. - Videos	- Attend - Quiz
14	2 hours practical	Evaluate lec.	Analysis of Sequencing data	- Practical Lec. - Videos.	- Attend - Quiz
15	2 hours practical	Explain lec.	Extraction of DNA from bacterial infected human and tissue	- Practical Lec.	- Attend - Quiz

11. Course Evaluation

The following evaluation methods are adopted:

- 1.Theoretical and practical quiz.
- 2.Attendance and discussion.
- 3.The experiments.

Distribution of grades:

1. Monthly examination for theoretical lectures (20 marks).
2. (5 marks) for activation and attendance.
3. Monthly examination for practical lectures (15 marks).
4. Total marks for Medical genetics 2 is (40 marks).
4. Final distribution examination marks as (35 marks) for theoretical and (25 marks) for practical, and the final marks for Medical genetics 2 is (100 marks).

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Jorde, L.B.; Carey, J.C & Bamshad, M.J. (2019). Medical genetics. Sixth Edition, June 1.
Main references (sources)	Genetics analysis and principle eight edition by Robert J. Brooker.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.ncbi.nlm.nih.gov .

Academic description of Medical genetics 2 – Third stage

Signature :

Name : Safaa Hussein Abdullah

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Hematology 2

1. Course Name :					
Hematology (2)					
2. Course Code:					
MTML3202					
3. Semester / Year:					
Sixth course /Third stage (6/3)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hour for theoretical +60 hours for practical)/3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Murhaf Lahlah			Email: murhaflahlah@gmail.com		
8. Course Objectives					
Course Objectives : Providing the student with a comprehensive and modern understanding of hematology, the normal and abnormal ranges of blood components, and the changes that occur with various diseases					
9. Teaching and Learning Strategies					
Strategy		- Discussion - Brainstorming - Team work			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Hematology 2					
1	2	Training students to conduct examinations and analyses,	Leukocytes (white blood cells)	Laboratory and computer equipment	Various quizzes and classroom activities

		give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.			
2	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Leukocytes disorder	Laboratory and computer equipment	Various quizzes and classroom activities
3	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Leukemia	Laboratory and computer equipment	Various quizzes and classroom activities
4	2	Training students to	Acute leukemia	Laboratory and	Various quizzes and

		conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.		computer equipment	classroom activities
5	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Chronic leukemia	Laboratory and computer equipment	Various quizzes and classroom activities
6	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the	Hodgkin's lymphoma	Laboratory and computer equipment	Various quizzes and classroom activities

		laboratory.			
7	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Non-Hodgkin's lymphoma	Laboratory and computer equipment	Various quizzes and classroom activities
8	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Platelets & platelet disorders	Laboratory and computer equipment	Various quizzes and classroom activities
9	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from	Hemostasis	Laboratory and computer equipment	Various quizzes and classroom activities

		patients and using modern equipment in the laboratory.			
10	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Bleeding disorders	Laboratory and computer equipment	Various quizzes and classroom activities
11	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Thrombosis (arterial & venous thrombosis)	Laboratory and computer equipment	Various quizzes and classroom activities
12	2	Training students to conduct examinations and analyses, give and interpret results, as well as the	Multiple myeloma	Laboratory and computer equipment	Various quizzes and classroom activities

		skill of collecting samples from patients and using modern equipment in the laboratory.			
13	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	ABO system	Laboratory and computer equipment	Various quizzes and classroom activities
14	2	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Blood transfusion	Laboratory and computer equipment	Various quizzes and classroom activities
15	2	Training students to conduct examinations and analyses,	Complications of blood transfusion	Laboratory and computer equipment	Various quizzes and classroom activities

		give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.			
Syllabus of Practical part for Hematology 2					
1	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Total White blood cell count	Laboratory and computer equipment	Various quizzes and classroom activities
2	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Absolute count of leukocytes	Laboratory and computer equipment	Various quizzes and classroom activities

3	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Differential count of leukocytes	Laboratory and computer equipment	Various quizzes and classroom activities
4	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Eosinophil count	Laboratory and computer equipment	Various quizzes and classroom activities
5	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and	Blood film of leukemia	Laboratory and computer equipment	Various quizzes and classroom activities

		using modern equipment in the laboratory.			
6	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Special stain of leukemia	Laboratory and computer equipment	Various quizzes and classroom activities
7	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Platelets count	Laboratory and computer equipment	Various quizzes and classroom activities
8	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of	Bleeding time	Laboratory and computer equipment	Various quizzes and classroom activities

		collecting samples from patients and using modern equipment in the laboratory.			
9	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Clotting time	Laboratory and computer equipment	Various quizzes and classroom activities
10	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Prothrombin time	Laboratory and computer equipment	Various quizzes and classroom activities
11	4	Training students to conduct examinations and analyses, give and	Partial thromboplastin time	Laboratory and computer equipment	Various quizzes and classroom activities

		interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.			
12	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Detection of coagulation factors deficiency by coagulometer	Laboratory and computer equipment	Various quizzes and classroom activities
13	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Quality control in laboratory	Laboratory and computer equipment	Various quizzes and classroom activities
14	4	Training students to conduct	Revision	Laboratory and computer	Various quizzes and classroom

		examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.		equipment	activities
15	4	Training students to conduct examinations and analyses, give and interpret results, as well as the skill of collecting samples from patients and using modern equipment in the laboratory.	Total White blood cell count	Laboratory and computer equipment	Various quizzes and classroom activities

11. Course Evaluation

The following evaluation methods are adopted:

- 1-Daily preparation
- 2-Daily oral exam
- 3-Monthly exam
- 4-Final exam
- 5-reports

Distribution of grades:

- 1. 20 St1
- 2. 20St2
- 3. 60 Final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1. Hoffbrand's essential hematology. A.VictorHoffbrand and Paul A.H. Moss , 7th edition , Wiley Blackwell (2016). 2. Hematology in clinical practice. Roberts. S. Hillman and Kenneth A , 5th edition , McGraw Hill Lange medical books (2011).
Recommended books and references (scientific journals, reports...)	3. Dacie and Lewis Practical hematology. S.Mitchell. Lewis and Barbara J. Bain, 10th edition , Churchill Livingstone Elsevier (2006).
Electronic References, Websites	www.google.com www.science direct.com

Academic description of Hematology 2 - Third Stage

Signature :

Name : Ass. Prof. Murhaf Lahlah

Al-Ayen Iraqi University
College of Health and Medical Technology
 Department of Medical Laboratory Technology
 Course Description form for Descriptive Biostatistics, 1st Semester

1. Course Name:					
Descriptive Biostatistics					
2. Course Code:					
MTML2105b					
3. Semester / Year:					
(2/3)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In-person attendance and weekly lectures					
6. Number of Credit Hours (Total) / Number of Units (Total):					
theoretical and practical lectures and three units ٦.					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Salam Hussein Ewaid			Email: salam.hussein@alayen.edu.iq		
8. Course Objectives					
Course Objectives: The students able to: - Provides an overview of basic statistical concepts. It lays the foundation for understanding basic statistical terms and concepts and the role statisticians play promoting scientific discovery. - In addition to descriptive statistics, this course covers two general areas of inferential statistics: estimation and hypothesis testing					
9. Teaching and Learning Strategies					
Strategy		- Introducing the student to the statistical methods used in collecting and presenting data and information. - Introducing the student to the statistical methods used in collecting and presenting data and information, enabling the student to utilize them in presenting the results of the graduation project, as well as in the future, after graduation, in conducting scientific research in the field of specialization.			
10. Course Theoretical Structure					
Week	Hours	Required	Unit or subject name	Learning	Evaluation

		Learning Outcomes		method	method
Syllabus of Theoretical part for Descriptive Biostatistics					
١	٢	Understand the lecture topic, its statistical benefits, and solve examples of it	Definition of Biostatistics, types of data, types of Variables and Sources of data	Weekly lectures, PowerPoint presentations, brainstorming, and students being asked to submit biostatistics reports on the Iraqi health situation	Oral questions, quizzes, monthly and semester exams
2	٢	//	Methods of data collection and sampling types.	//	//
3	٢	//	Numerical methods of presentation of data.	//	//
4	٢	//	Graphical methods of presentation of data	//	//
5-7	٢	//	Mathematical methods of presentation of data:(1): Measures of Central Tendency (Arithmetic Mean, Median, Mode) (2): Measures of Non-Central location (Percentiles, Quartiles	//	//
8-9	٢	//	Measures of Dispersion (Range, Variance, Standard Deviation) of ungroup and group data. Coefficient of Variation, Standard Errors	//	//
10-11	٢	//	Percentiles, Quartiles and Interquartile Range	//	//
12-13	٢	//	Moments, Skewness measurement & Kurtosis Measurement	//	//
14-15	٢		Elementary Probability Theory		
Syllabus of Practical part for Descriptive Biostatistics					
١	//	//	Application of types of data types of Variables and Sources of data.	//	//
٢	//	//	Application of data collection and sampling types	//	//
٣	//	//	Application of Numerical methods of presentation of data	//	//
٤	//	//	Application of Graphical methods of presentation of data	//	//
٧-٥	//	//	Application of Mathematical methods of presentation of data:(1): Measures of Central Tendency (Arithmetic Mean, Median, Mode). (2): Measures of	//	//

			n-Central location (Percentiles, Quartiles).		
٩-٨	//	//	Application of Measures of Dispersion (Range, Variance, Standard Deviation) of ungroup and group data. Coefficient of Variation, Standard Errs	//	//
١١-١٠	//	//	Application of Percentiles, quartiles and Interquartile Range	//	//
١٢-١٣	//	//	Application of Moments, Skewness measurement and Kurtosis Measurement	//	//
١٤-١٥	//	//	Application of Elementary Probability Theory	//	//

11. Course Evaluation

The following evaluation methods are adopted:

1. This is a dynamic class where students have to be prepared prior to each session to discuss intriguing topics of current interest in different areas.
2. So, being in class and participating actively in discussions are of great importance and highly recommended.
3. In fact, their grade is influenced by their attendance and participation.
4. On the other side, students must be ready any time to do drop quizzes and homework and thus to ensure success and progress in this course.

Distribution of grades:

The monthly exam: 40 marks/20 marks for theoretical part, 15 marks for practical part and 5 marks for daily evaluation

The final exam: 60 marks / 25 marks for practical and 35marks for theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books)	Amjad Daoud Niazi:” Statistical Analysis in Medical Research 2 nd Edition; March 2004.
Main references (sources)	Biostatistics a foundation for analysis in the Health Sciences, Wayne W. Daniel Professor Emeritus Georgia State University
Recommended books and references (scientific journals, reports...)	Professor (Dr.) Amjad Daoud Niazi:” Statistical Analysis in Medical Research ٢ nd Edition ; March 2004٢
Electronic References, Websites	

Academic description of Descriptive Biostatistics, 2nd Stage

Signature:

Name: Prof. Salam Hussein Ewaid

Course Description Form

1. Course Name:					
Medical Parasitology 1					
2. Course Code:					
MTML2106					
3. Semester / Year:					
2/3					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours					
(Total) 30 h / Number of Units (Total) 4 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Louay Abbas Faisel Email: alsahlani.louay@gmail.Com					
8. Course Objectives					
Course Objectives			• A knowledge: • It is to provide an idea and basic informat about parasites and the diseases they cause and develop the student's ability and skill understanding their pathological analyses. 2- The student learns the skill, how and wh parasites are located - 3- The student learns the skill of conduct pathological examinations and different method diagnosis. - Evaluation methods 1- Conducting daily qu exams Quizzes 2- Conducting monthly exams 3- Conducting semester and final exams 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 Parasites; Host; Zoonosis; Host-parasite Relationships; Life Cycle	General Introduction: Introduction; Parasites; Host; Zoonosis; Host-parasite Relationships; Life Cycle of Parasites; Sources of	Lectures and practical lessons -Discussion	Theory exams - practical -

		of Parasites; Sources of Infection; Modes of Infection; Pathogenesis; Immunity in Parasitic Infection; Laboratory Diagnosis	Infection; Modes of Infection; Pathogenesis; Immunity in Parasitic Infection; Laboratory Diagnosis	Brainstorming	Discussions
2	2T + 4 P	The student learns the Protozoa General Features ; Structure ; Reproduction ; Life Cycle ; Classification of Protozoa ; Phylum Sarcomastigophora; Phylum Apicomplexa; Phylum Ciliophora; Phylum Microspora	Protozoa General Features ; Structure ; Reproduction ; Life Cycle ; Classification of Protozoa ; Phylum Sarcomastigophora; Phylum Apicomplexa; Phylum Ciliophora; Phylum Microspora	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
3	2T + 4 P	The student will learn the Sacodina, (Amoebae) Entamoeba histolytica; History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Extraintestinal Amoebiasis; Laboratory Diagnosis; Immunity; Treatment;.	Sacodina, (Amoebae) Entamoeba histolytica; History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Extraintestinal Amoebiasis; Laboratory Diagnosis; Immunity; Treatment;	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
5+4	2T + 4 P	The student will learn the Entamoeba Coli , Entamoeba Gingivalis; Endolimax nana 24;; Pathogenic Free-Living Amoebae; naegleria Fowleri; History and Distribution 26; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment	Entamoeba Coli , Entamoeba Gingivalis; Endolimax nana 24;; Pathogenic Free-Living Amoebae; naegleria Fowleri; History and Distribution 26; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
6	2T + 4 P	The student will learn Intestinal, Oral, and Genital Flagellates Giardia Lamblia; History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory	Intestinal, Oral, and Genital Flagellates Giardia Lamblia; History and Distribution; Habitat; Morphology; Life Cycle; Pathogenicity and Clinical Features; Laboratory Diagnosis; Treatment	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

		Diagnosis; Treatment			
7	2T + 4 P	To identify types of Genus Trichomonas. T. vaginalis/ urogenital flagellate. T. hominis T. tenax Biology , medical importance and Lab. Diagnosis of each species.	Genus Trichomonas. T. vaginalis/ urogenital flagellate. T. hominis T. tenax Biology , medical importance and Lab. Diagnosis of each species.	- Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
8	2T + 4 P	Study the effect of Heamo- flagellates(blood& tissue flagellates),general characters. Developmental stages in the vertebrate & invertebrate hosts. Genus leishmania ,species of leishmania, biology, vector, medical importance of eachspecies, types of leishmaiasis , life cycle ,Lab. Diagnosis, including immunological tests.	Heamo- flagellates(blood& tissue flagellates),general characters. Developmental stages in the vertebrate & invertebrate hosts. Genus leishmania ,species of leishmania, biology, vector, medical importance of eachspecies, types of leishmaiasis , life cycle ,Lab. Diagnosis, including immunological tests.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
9	2T + 4 P	To learn about Genus Trypanosoma, species of trypanosome, biology , vector, medical importance of each species, forms of parasite, life cycle,Lab. Diagnosis.	Genus Trypanosoma, species of trypanosome, biology , vector, medical importance of each species, forms of parasite, life cycle,Lab. Diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
10	2T + 4P	To learn about Ciliophora: Blantidiumcoli ,Biology , medical importance, Lab. Diagnosis. Apicomplex: General charcter.Genus Toxoplasma.,T.gondii ,Biology, medical Importance,acquired and congenital toxoplasosis. Life cycle, role of domesticate animals in the transmission of the disease. Lab. Diagnosis.	Ciliophora: Blantidiumcoli ,Biology , medical importance, Lab. Diagnosis. Apicomplex: General charcter.Genus Toxoplasma.,T.gondii ,Biology, medical Importance,acquired and congenital toxoplasosis. Life cycle, role of domesticate animals in the transmission of the disease. Lab. Diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

11	2T + 4P	To learn about Genus plasmodium. Introduction to malarial parasites, malarial paroxysm, general life cycle of the plasmodium	Genus plasmodium. Introduction to malarial parasites, malarial paroxysm, general life cycle of the plasmodium , species	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
		species of plasmodium.	of plasmodium.		
12	2T + 4P	To learn about P.falciparum, P. vivax, P ovale, P. malarae Disease, pathology, medical importance, distribution, main differences during life cycle.	P.falciparum, P. vivax, P ovale, P. malarae Disease, pathology, medical importance, distribution, main differences during life cycle.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
13	2T + 4P	To learn about General discussion on malarial parasites ,epidemiology, methods of diagnosis. Time to take clinical samples. Blood films.	General discussion on malarial parasites ,epidemiology, methods of diagnosis. Time to take clinical samples. Blood films.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
14	2T + 4P	To learn about Isopora, pathology, medical importance,Lab.Dianosis. Sarcocystis species: pathology , medical importance,Lab diagnosis.	Isopora, pathology, medical importance,Lab.Dianosis. Sarcocystis species: pathology , medical importance,Lab diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
15	2T + 4P	To learn about Cryptosporidiadse Genus cryptosporidium, species belong the genus, biology, pathology, epidemiology,Lab.diagnosis.	Cryptosporidiadse Genus cryptosporidium, species belong the genus, biology, pathology, epidemiology,Lab.diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - 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. Essentials of Medical Parasitology 2. Principle of Medical Physiology 3. Pinker book 2018
Main references (sources)	Medical Parasitology: A Self-instructional T
Recommended books and references (scientific journals, reports...)	1- NCBI 2- PubMed 3- You tube
Electronic References, Websites	Mehlhorn, Heinz, ed. "Encyclopedic reference parasitology: Biology, structure, function." (2001).

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Biochemistry1

1. Course Name :					
Biochemistry1					
2. Course Code:					
MTML2102					
3. Semester / Year:					
3 / 2					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
Personal attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours(30 Hours Theoretical + 60 Hours Practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Eyad Ali Othman			Email: dr.ieadothman@gmail.com Eyad-othman@alayen.edu.iq		
8. Course Objectives					
• General goal: To give an idea and basic information in clinical chemistry and develop skills The student's skill in pathological analyses. • Specific objective: For the student to be able to perform clinical examinations and be knowledgeable. • Preparing different solutions.					
9. Teaching and Learning Strategies					
Strategy		• Enhance students' understanding of the basics of life chemistry and its applications. • Developing students' critical and analytical thinking. • Preparing students to link theoretical and practical concepts and use them in daily life and professional disciplines.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Biochemistry1					
1	2	-The student acquires useful information about the metabolism process in the body	Introduction of biochemistry, Metabolism (Anabolism & Catabolism), Production of 1 Energy	1-The teacher prepares lectures about the lecture in paper and electronic form and	1-Multiple choice questions. 2- Oral exam and direct questions in class.

				presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the vocabulary of the subject.	3- Laboratory work reports. 4- Mid-term exam 5- Final exam
2	2	-The student acquires information about the metabolic process in the body during illness or during stress and its deviations compared to the healthy state	Biochemistry and metabolism in illness and recovery. Obesity. Stress Exercises		
3	2	-The student acquires information about the metabolic process in the body during illness or during stress and its deviations compared to the healthy state	Biochemistry and metabolism in illness and recovery. Obesity. Stress Exercises		
4	2	-The student acquires information about the importance of food compounds in the body and their impact on maintaining public health and preventing nutritional diseases.	Biochemistry nutrition. dietary. Indirect effect with maintain health and preventive 4, 5 medicine.		
5	2	-The student acquires information about the importance of food compounds in the body and their impact on maintaining public health and preventing nutritional diseases.	Biochemistry nutrition. dietary. Indirect effect with maintain health and preventive 4, 5 medicine.		
6	2	-The student acquires information about the importance of biochemistry and its interconnection with all sciences.	Biochemistry has A Biochemical Basis in all diseases and sciences		
7	2	-The student acquires information about the importance of biochemistry and its interconnection with all sciences.	Biochemistry has A Biochemical Basis in all diseases and sciences		
8	2	The student gains information about the importance of pH stability in the body	Biochemistry at Water PH , acid base balance		
9	2	The student gains information about the importance of electrolytes	Biochemistry and electrolytes		

		the body and their role.			
10	2	The student gains information about the importance of carbohydrate metabolism in the body.	Metabolism of Carbohydrate: 1) MonoSaccharides, Disaccharides and polysaccharides 2) pentose phosphate pathway 3) Glucosamine lyans. 4) proteoglycans and glycoproteins		
11	2	The student gains information about the importance of carbohydrate metabolism in the body.	Metabolism of Carbohydrate: 1) MonoSaccharides, Disaccharides and polysaccharides 2) pentose phosphate pathway 3) Glucosamine lyans. 4) proteoglycans and glycoproteins		
12	2	The student gains information about the importance of ATP results from carbohydrate metabolism and its role in body.	ATP Synthesis The Role of ATP in Carbohydrate reactions		
13	2	The student acquires information about the definition of fats, their types and their metabolism	Lipids. * Biosynthesis, oxidation and Types of Lipids. Metabolism of glycerol		
14	2	The student acquires information about the definition of fats, their types and their metabolism	Lipids. * Biosynthesis, oxidation and Types of Lipids. Metabolism of glycerol		
15	2	The student acquires information about the definition of fats, their types and their metabolism	Lipids. * Biosynthesis, oxidation and Types of Lipids. Metabolism of glycerol		

Syllabus of The Practical Course

1	4	The student learns how to collect and preserve test Specimen	Specimen Collection [blood, urine, CSF].	Explain and then have the students work in groups.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
2	4	The student learns how to collect and preserve test Specimen	Specimen Collection [blood, urine, CSF].	Explain and then have the students work in groups.	
3	4	The student learns how to transport and handle test samples	Specimen Transport and Specimen Processing.	Explain and then have the students work in groups.	
4	4	The student learns how to transport and handle test	Specimen Transport and Specimen Processing.	Explain and then have the students work in	

		samples		groups.	
5	4	The student learns how to collect test samples	Blood collection techniques, Anticoagulant, Separation of Ser	Explain and then have the students work in groups.	
6	4	The student learns the operating principles of some analytical devices used in laboratory	Principles Of Instrumentation [photometer, Colorimetry and SpectrophotometryComponents]	Explain and then have the students work in groups.	
7	4	The student learns how to detect carbohydrates	Carbohydrates tests	Explain and then have the students work in groups.	
8	4	The student learns how to detect carbohydrates by reaction reactions	Molish test, Iodine test, Benedict test and Barfoed test.	Explain and then have the students work in groups.	
9	4	The student learns some of the distinct reactions of carbohydrates	Seliwanoff's test, Osazone test, Athrone test and Dinitrosalicylic acid Method.	Explain and then have the students work in groups.	
10	4	The student learns some of the distinct reactions of carbohydrates	Roe's method, Fehling's test, Somogyi-Nelson method and Mu acid test.	Explain and then have the students work in groups.	
11	4	The student learns some of the distinctive interactions types of amino acids	Amino acids tests	Explain and then have the students work in groups.	
12	4	The student learns some of the distinctive interactions types of amino acids	Ninhydrin Test, Isatin Test and Xanthoprotic test.	Explain and then have the students work in groups.	
13	4	The student learns some of the distinctive interactions types of amino acids	Pauly's diazo test, Sakaguchi Test Millon's Test	Explain and then have the students work in groups.	
14	4	The student learns some of the distinctive interactions types of amino acids	Pauly's diazo test, Sakaguchi Test Millon's Test	Explain and then have the students work in groups.	
15	4	The student learns some of the distinctive interactions types of amino acids	Ehrlich Test, Nitroprusside Test, Sullivan and McCarthy's Test	Explain and then have the students work in groups.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam

11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes

2. Monthly Exams
3. Practical Exams
4. Reports
5. Final Exam

Distribution of grades:

1. Daily tests (10 marks)
2. 2- Monthly exams (20 marks)
3. 3- Activities and reports (10 marks)
4. 4- Final practical exam (20 marks)
5. 5- Final theoretical exam (40 marks)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Clinical Biochemistry Lecture notes .Geoffrey Bec Ninth Edition. A John Wiley & Sons, Ltd., Publication
	2-Text book of Biochemistry for medical students Pras Manjeshwar. Revised Furth Edition 2016
Recommended books and references (scientific journals, reports...)	١- Harper's Illustrated. Biochemistry. LANGE medical l Twenty-sixth edition. Robert K. Murray, Daryl K. Gar Peter A. Mayes, Victor W. Rod well, PhD ٢-Lippincott's. Illustrated Reviews: Biochemistry. Fifth Edition
Electronic References, Websites	

Academic description of **Biochemistry1** – Second Stage

Signature :

Name : dr.Eyad Ali Othman

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Medical Bacteriology 1

1. Course Name : Medical Bacteriology 1	
2. Course Code: MTML2101	
3. Semester / Year: 3/2	
4. Description Preparation Date: 2025-2026	
5. Available Attendance Forms: Attendance	
6. Number of Credit Hours (Total)/ Number of Units (Total): 90/4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Asaad Abbas Jlood	Email: asaad.jlood@alayen.edu.iq
8. Course Objectives	
Course Objectives :The students will be able to: ✓ To introduce students to the fundamentals of medical bacteriology, including bacterial structure, growth, genetics, and physiological functions, as well as their role in infectious diseases. ✓ To enable students to understand the relationship between bacteria and humans in both health and disease, and the role of normal flora in infection prevention. ✓ To provide students with essential laboratory diagnostic skills required for the isolation and identification of pathogenic bacteria from various clinical samples. ✓ To familiarize students with mechanisms of bacterial pathogenesis and toxin production, and the modes of infection transmission in hospitals and communities. ✓ To train students in the use and interpretation of basic bacteriological tests, including Gram staining, culture techniques, biochemical testing, and antibiotic sensitivity testing. ✓ To explain the mechanisms of antibiotic action and bacterial resistance, and their impact on public health and clinical therapy. ✓ To develop students' clinical analytical thinking skills in correlating laboratory results with clinical conditions to identify the causative agent. ✓ To strengthen the principles of infection control and vaccination in healthcare practice. ✓ To prepare students for the clinical training phase, enabling them to work effectively in diagnostic laboratories or pursue postgraduate studies in medical microbiology.	
9. Teaching and Learning Strategies	
Strategy	The teaching and learning strategies are designed to provide students with both theoretical knowledge and practical skills related to medical bacteriology by integrating traditional teaching methods with modern educational technologies to ensure effective

learning outcomes at both the cognitive and practical levels.

✓ **Interactive Lectures**

- Used to explain the fundamental concepts of bacteria in terms of structure, growth, and genetics.
- Incorporate discussions and short questions to assess immediate understanding.
- Supported by anatomical illustrations, PowerPoint presentations, and video demonstrations.

✓ **Class Discussions and Brainstorming**

- Encourage students to think critically and link theoretical knowledge with clinical cases.
- Applied when discussing topics such as bacterial resistance, normal flora, and pathogenesis.

✓ **Problem-Based Learning (PBL)**

- Real clinical case studies are presented, and students are asked to analyze them to determine the causative agent.
- Aims to develop analytical thinking and the ability to correlate laboratory results with clinical conditions.

✓ **Use of Multimedia and E-Learning Tools**

- Incorporates anatomical videos and interactive simulations of bacterial culture and Gram staining.
- Utilizes electronic platforms such as **Google Classroom** or Alayen Iraqi University e-learning system to follow up on assignments and lectures.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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Syllabus of Theoretical part for: Medical Bacteriology 1

1	6	• Students should define medical bacteriology and explain its clinical importance. • Students should differentiate between bacterial and eukaryotic cells. • Students should distinguish the main bacterial types according to shape, size, and structure.	introduction to Medical Bacteriology + Introductory Laboratory in Microbiology	interactive lecture + PowerPoint presentation + classroom discussion + introductory lecture, orientation tour in the laboratory, practical demonstration, hands-on training, and short discussion.	quiz + participation observation + short test, practical performance observation, classroom participation, and recording notes in the laboratory logbook.
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2	6	• Students should identify bacterial cell components (cell wall, membrane, cytoplasm, nucleoid, flagella, pili, and capsule). • Students should explain the biological functions of each component and its role in pathogenicity. • Students should differentiate between Gram-positive and Gram-negative bacteria in terms of cell-wall structure.	Structure and Function of Bacterial Cell Components + Sterilization and Disinfection	Lecture supported with microscopic images + anatomical video + discussion	Oral Exam + Homework + Quiz + Practical Performance Observation + Classroom Participation + Laboratory Logbook.
3	6	• Students should describe the bacterial growth phases (lag, log, stationary, death). • Students should explain the factors affecting bacterial growth (temperature, pH, oxygen, nutrients). • Students should describe methods for measuring and controlling growth (sterilization and disinfection).	Bacterial Growth and Death + The Microscope	Theoretical lecture + group activity (growth curve drawing) + demonstrative experiment	Quiz + Activity Evaluation + Short Test + Observation of Practical Performance During Microscope Use + Classroom Participation + Laboratory Logbook.
4	6	• Students should list the main types of culture media (basic, differential,	Bacterial Culture and Types of Culture Media + Preparation of Culture Media	Lecture + practical demonstration + individual application	Quiz + Observation of Practical Performance During

		selective, enriched). • Students should explain the purpose and clinical use of each culture medium. • Students should perform bacterial inoculation using the streak-plate technique.			Preparation + Classroom Participation + Laboratory Logbook.
5	6	• Students should explain basic bacterial metabolic processes (fermentation, respiration, and glycolysis). • Students should describe nutritional requirements and their role in bacterial growth. • Students should correlate metabolic activity with bacterial environmental conditions.	Bacterial Physiology and Nutritional Metabolism + Aseptic Technique and Microbial Cultivation	Interactive lecture + metabolic pathway analysis workshop + in-class questions	Short Theoretical Test + Participation + Quiz + Observation of Practical Performance During Cultivation + Evaluation of Cleanliness and Technique + Laboratory Logbook.
6	6	• Students should describe bacterial genetic material (DNA, RNA, plasmids). • Students should explain the mechanisms of replication, transcription, and genetic	Bacterial Genetics + Preparation of Streak Plates for Isolation of Single Colonies from a Mixed Culture	Slide presentation + group activity (genetic mapping) + discussion	Group Activity Evaluation + Written Assignment + Quiz + Observation of Practical Performance During Isolation + Evaluation of Single Colony Quality + Laboratory

		mutations. Students should describe genetic exchange mechanisms (transformation, conjugation, and transduction).			Logbook.
7	6	- Students should infer the role of genetic mutations in antibiotic resistance. - Students should define bacterial pathogenicity and toxicity. - Students should list the main virulence factors (exotoxins, endotoxins, enzymes, capsules).	Bacterial Pathogenicity and Toxin Factors + Growth on Different Culture Media	Video presentation + interactive lecture + clinical case analysis	Oral Exam + Activity Sheet + Quiz + Observation of Practical Performance + Evaluation of Student's Notes on Growth on Different Media + Laboratory Logbook.
8	6	- Students should correlate the pathogen with its clinical manifestation. - Students should identify the normal microflora sites in the human body. - Students should explain the protective role of normal flora against pathogens.	Normal Flora + Study of Colonial Morphology and Bacterial Staining	Short lecture + open discussion + written exercise	Quiz + Group Discussion + Short Test + Observation of Practical Performance During Staining and Microscopic Examination + Evaluation of Observation Accuracy + Laboratory Logbook.
9	6	Students should interpret the concept of opportunistic infection due to flora imbalance.	Chemotherapy and Drug Resistance + Gram Stain and Other Staining Techniques	Lecture + laboratory demonstration + analysis of antibiotic sensitivity test results	Practical Evaluation + Laboratory Report + Quiz + Observation of Practical Performance

		• Students should classify antibiotics according to their mechanisms of action. • Students should explain bacterial mechanisms of antibiotic resistance.			During Staining and Microscopic Examination + Evaluation of Result Interpretation Accuracy + Laboratory Logbook.
10	6	• Students should perform antibiotic susceptibility testing (Kirby-Bauer method). • Students should list the main bacterial vaccines (live-attenuated, inactivated, toxoids). • Students should explain the mechanism of immunity formation after vaccination.	Vaccines + Viable Bacterial Count	PowerPoint presentation + discussion + DPT vaccine case study	Short Written Test + Analytical Assignment + Quiz + Observation of Practical Performance During Counting + Evaluation of Calculation Accuracy + Laboratory Logbook.
11	6	• Students should relate vaccination programs to infection prevention. • Students should describe morphology and laboratory features of Gram-positive cocci (Staphylococcus, Streptococcus, and Enterococcus).	Gram-Positive Cocci + Bacterial Growth Curve in Liquid Medium	Lecture + practical training on biochemical tests + PBL (problem-based learning)	Practical Evaluation + Oral Exam + Quiz + Observation of Practical Performance During Measurement and Drawing + Evaluation of Result Accuracy + Laboratory Logbook.

		Students should distinguish pathogenic from non-pathogenic Staphylococcus species.			
12	6	- Students should interpret diagnostic test results (Catalase, Coagulase, and Hemolysis). - Students should identify important spore-forming bacilli (Bacillus anthracis, B. cereus, Clostridium spp.). - Students should explain the process of spore formation and its resistance role.	Spore-Forming Gram-Positive Bacilli + Microbial Sensitivity to Antibiotics	Practical demonstration + explanatory video + laboratory application	Practical Performance Evaluation + Quiz + Short Test + Observation of Practical Performance During Examination + Evaluation of Measurement and Interpretation Accuracy + Laboratory Logbook.
13	6	- Students should correlate bacterial toxins with clinical diseases such as tetanus and food poisoning. - Students should differentiate between Listeria monocytogenes and Corynebacterium diphtheriae. - Students should explain transmission routes and pathogenesis for each species.	Non-Spore-Forming Gram-Positive Bacilli	Mini lecture + practical training + clinical case discussion	Practical assessment + performance record

14	6	• Students should interpret culture results and specific diagnostic tests. • Students should analyze clinical cases based on laboratory findings. • Students should correlate specimen type with the appropriate diagnostic method.	General Review and Clinical Case Studies + Preliminary Identification of Gram-Positive Cocci and Bacilli (Staphylococcus, Streptococcus, Listeria, Corynebacterium)	Case-based learning + group work	Case Report + Oral Presentation + Quiz + Observation of Practical Performance in Conducting Tests + Evaluation of Result Interpretation Accuracy + Laboratory Logbook.
15	6	• Students should discuss therapeutic and preventive measures for each case. • Students should summarize the core concepts of medical bacteriology. • Students should demonstrate integration between theoretical concepts and practical applications. • Students should show proficiency in laboratory work and clinical sample diagnosis.	Comprehensive Evaluation and Course Conclusion	Open discussion + Q&A session + interactive review	Final theoretical and practical examination

11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes: To assess weekly comprehension.

2. Monthly and Oral Exams: To evaluate understanding and reasoning.
3. Practical Examinations: To assess laboratory performance and precision.
4. Reports and Assignments: To measure research and analytical skills.
5. Final Examination (Theoretical & Practical): To assess overall understanding of the course.

Distribution of grades:

1. Attendance and Participation – 5 marks
2. Daily and Oral Tests – 5 marks
3. Monthly and Written Exams – 20 marks
4. Laboratory Reports and Activities – 10 marks
5. Final Theoretical Exam – 40 marks
6. Final practical Exam – 20 marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Required Textbooks (Curricular Books) 1. Forbes, B. A., Sahm, D. F., & Weissfeld, A. S. (2022). <i>Bailey & Scott's Diagnostic Microbiology</i> (15th Edition). Elsevier. – The main approved textbook for teaching <i>Medical Bacteriology</i> in the second stage. – Covers diagnostic foundations, culture methods, antibiotic susceptibility testing, and laboratory diagnosis of bacterial diseases. 2. Jawetz, E., Melnick, J., & Adel berg, E. (2024). <i>Medical Microbiology</i> (28th Edition). McGraw-Hill Education. – A supporting curricular textbook covering theoretical and clinical aspects of bacterial diseases, pathogenesis mechanisms, and bacterial immunity.
Main references (sources)	• Chees brough, M. (2019). <i>District Laboratory Practice in Tropical Countries</i> (2nd Edition). Cambridge University Press. – A practical reference for laboratory techniques, culture media preparation, sterilization, and Gram staining. • Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2021). <i>Medical Microbiology</i> (10th Edition). Elsevier. – A comprehensive scientific reference linking bacterial pathogens to their corresponding clinical manifestations. • Prescott, L. M., Harley, J. P., & Klein, D. A. (2021). <i>Microbiology</i> (11th Edition). McGraw-Hill Education. – Supports concepts of bacterial physiology, growth, and

	genetics.
Recommended books and references (scientific journals, reports...)	1. Levinson, W. (2023). <i>Review of Medical Microbiology and Immunology</i> (17th Edition). McGraw-Hill Education. – An important review book for exam preparation, presenting key concepts in a question-and-answer format. 2. Tortora, G. J., Funke, B. R., & Case, C. L. (2022). <i>Microbiology: An Introduction</i> (14th Edition). Pearson. – A supportive reference explaining general microbiology principles in a simplified, illustrated manner. 3. World Health Organization (WHO). (2020). <i>Laboratory Biosafety Manual</i> (4th Edition). Geneva: WHO Press. – An internationally recognized manual for biosafety procedures in microbiological laboratories. 4. Clinical and Laboratory Standards Institute (CLSI) Guidelines (2023). – Provides the latest standards for antimicrobial susceptibility testing (AST) and interpretation. • <i>Journal of Clinical Microbiology (JCM)</i> – American Society for Microbiology (ASM) • <i>The Lancet Infectious Diseases</i> • <i>Clinical Microbiology Reviews</i>
Electronic References, Websites	https://www.cdc.gov U.S. Centers for Disease Control and Prevention (CDC) – Provides infectious-disease diagnostic guidelines. https://www.who.int World Health Organization (WHO) – Contains the latest biosafety and vaccination protocols. https://www.asm.org American Society for Microbiology (ASM) – Educational resources and recent microbiology research. . https://pubmed.ncbi.nlm.nih.gov PubMed Database – Peer-reviewed articles and studies in medical bacteriology. https://www.clsi.org Clinical and Laboratory Standards Institute (CLSI) – Latest updates on antibiotic-susceptibility testing. https://microbiologyonline.org British Microbiology Society site – Visual and interactive educational materials for students.

Academic description of Medical Bacteriology 1
2nd Stage

Signature:

A handwritten signature in blue ink, featuring a large, sweeping loop on the left and a more complex, scribbled structure on the right.

Name: Dr. Asaad Abbas Jlood

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Human physiology 1

1. Course Name :					
Human Physiology 1					
2. Course Code:					
MTML2103					
3. Semester / Year:					
Third course / Second stage (3/2)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hours for theoretical + 60 for practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: MSC. Sarah Mousa Issa Email: sarahalsarrai@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : Introducing students to the components of somatic cells and the various components of blood, enabling them to prepare for future work.					
9. Teaching and Learning Strategies					
Strategy		- Brain storming - Feedback - Discussion - Team work			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Human physiology					
1	2	Definition of Human Physiology	General Introduction to Physiology Cell Physiology: General Functions,	-In attendance - Power point	-Discussion -Oral Exam

			Cell Membrane Transport		
2	2	Knowledge of physiological fields and their basic sciences	General Idea about Body fluids: Types, Composition, and Functions. Unit of Measurement , Conversion and Conversion factor.	-In attendance - Power point	-Report Preparation
3	2	Develop students' understanding of blood and its components	Blood: Composition, Specific Functions of each Compartment. Plasma and Serum Differences and Separation .	-In attendance - Power point	- Group Discussion
4	2	Develop students' abilities to understand the concept of hemoglobin	RBCs: Definition, Structure, and Normal Value; Hb Definition, Structure, and Normal Value ; Blood Groups.	-In attendance - Power point	- Daily Exam - Discussion
5	2	Recognizing the formation of red blood cells Their path and their death	Erythropoiesis, Homeostasis, Death and Disposal.	-In attendance - Power point	- Group Discussion
6	2	Recognizing white blood cell types and their functions	White Blood Cells: Classification, Specific Function ,Normal Value.	-In attendance - Power point	- Discussion -Comparison with the previous lecture
7	2	Request numbers for information about platelet function	Platelet: Definition, Function, Normal Value, Thrombopoiesis and Hemostasis	-In attendance - Power point	- Report Preparation

8	2	Developing scientific thinking skills and performance experiences for measuring pressure	Heart Physiology: Conductive System, Cardiac Output (Mechanics and Control), and Factor Affecting.	-In attendance - Power point	- Discussion - Oral Exam
9	2	Recognizing the path of blood in the circulatory system	Vascular (Blood Vessels) Physiology: Mechanics and Control; Blood Pressure; and Factor Affecting .	-In attendance - Power point	- Group Discussion
10	2				
11	2	-Identifying the lymphatic system, its functions, and its components. Training in the use of measuring devices	Lymphatic Physiology: Organs: Composition, Function of Each part. Lymph: Structure , Hemodynamic and Factor Affecting their Movement.	-In attendance - Power point	- Short Exam
12	2	-Gaining information about the functions of the respiratory system organs	Respiratory Physiology: Parts and Specific Functions; Ventilation: Mechanics and Control.	-In attendance - Power point	- Group Report Preparation
13	2	Understanding the transport of gases between the organs of the respiratory system and the blood	External Respiration, Gas Blood Transport, Internal Respiration: Mechanics, Control and Factor affecting.	-In attendance - Power point	- Oral Exam - Discussion
14	2	Lung volume: normal values and factors	Lung Volumes: Normal Values and Factor Affecting;	-In attendance - Power point	- Group Discussion

		affecting them; conscious and unconscious control of breathing. The role of the pons and medulla in the game of breathing	Conscious and Un-Conscious Control of Respiration. Role of Pons and Medulla in Respiratory Transient.		
15	2	Acid - base: Definition, electrical appliances, and body systems in organization	Acid-Base Balance: Definition, Buffer Systems, and Role of Body Systems In the Regulation.	-In attendance - Power point	-Short Exam - Group -Report Preparation
Syllabus of Practical part for Human physiology					
1	4	- Training students on examining a urine sample and how to record the results.	Urine Sample: Importance, Method of Collection, Preparation, Transport and Storage Physical Examination of Urine Sample.	Laboratory team-work	-Oral quiz -lab. Work skills
2	4	- Training students on the steps of microscopic urine examination and recording the results.	Microscopic Examination of Urine: The identification of Epithelial Cells, Blood Cells, crystals, casts,...etc	Laboratory team-work	-Discussion -lab. Work skills
3	4	-Define bacteria - Training students on diagnosing bacteria, viruses, and yeasts in a urine sample.	Microscopic Examination of Urine: The identification of Bacteria, Yeast, Mucus, Casts,... Etc.	Laboratory team-work	-Quiz -lab. Work skills

4	4	- Developing skills in examining and diagnosing a urine sample.	Repeat	Laboratory team-work	-Explanation -lab. Work skills
5	4	- Training students on chemical examination of a urine sample.-Earn working skills	Chemical Examination of Urine	Laboratory team-work	-Writing skills -lab. Work skills
6	4	-Define examination methods -Compare between the methods	Repeated	Laboratory team-work	-Discussion -lab. Work skills
7	4	- Training students on counting sperm in a sample under a microscope.	Semen Analysis: Type of Collection & Physical Examination	Laboratory team-work	-Oral quiz -lab. Work skills
8	4	- Training students on counting sperm in a sample under a microscope. -Earn working skills of examining a semen sample and distinguishing between sperm activity and potency.	Semen Analysis: Motility, Viability, & Morphology. Semen Analysis: Cell Counting Technique.	Laboratory team-work	-Oral quiz -lab. Work skills
9	4	- Enhancing students' performance	Repeat Semen Analysis.	Laboratory team-work	-Reports -lab. Work skills

		skills in examining a semen sample.			
10	4	-Define blood group -Knowledge of its types	Blood Group	Laboratory team-work	-Oral quiz -lab. Work skills
11	4	-Earn working skills to use a stethoscope.- Earn working skills	Stethoscope and its uses.	Laboratory team-work	-Discussion -lab. Work skills
12	4	- Developing students' skills in measuring normal and abnormal blood pressure.	Blood Pressure	Laboratory team-work	-Discussion -lab. Work skills
13	4	- Enhancing students' skills in measuring blood pressure.	Repeated	Laboratory team-work	-Reports -lab. Work skills
14	4	-Define the topic	ESC	Laboratory team-work	-Evaluation of team work
15	4	-Understand the topic -Earn working skills	Body Temperature	Laboratory team-work	-Oral quiz -lab. Work skills

11. Course Evaluation

The following evaluation methods are adopted:

1. Month exam
2. Final exam
3. Quiz
4. Daily discussion
5. Reports writing

Distribution of grades:

1. The monthly exam : 40 marks/20 marks for theoretical part , 15 marks for practical part

2. 5 marks for daily evaluation
3. The final exam: 60 marks / 25 marks for practical and 35 marks for theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Cindy L. Stanfield: Principles of Human Physiology, 6th edition Tortora, Gerard J.; Derrickson, Bryan H.: Principles of Anatomy and Physiology, Control Systems of the Human Body Vol. 3, 10th Edition
Recommended books and references (scientific journals, reports...)	Martin Caon (2020): Examination Questions and Answers in Basic Anatomy and Physiology, School of Health Sciences Flinders University Bedford Park , South Australia , Australia. Alkinany, Azza Sajid(2016) :. Introduction to Human Physiology, Dar Wael f Publishing m Amman
Electronic References, Websites	-Physiology Lecture Slides San Diego Miramar College. https://www.youtube.com/watch?v=dIHrbHN7udg -UO physiology lecture to explore mechanics of walking Oregon News.

Academic description of Human physiology 1 - Second Stage

Signature :

Name : MSC. Sarah Mousa Issa

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Human physiology 1

1. Course Name :					
General Human Histology 1					
2. Course Code:					
MTML 2104					
3. Semester / Year:					
Third course / Second stage (3/2)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
٦0 Hours (30 hours for theoretical + ٣0 for practical) / 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Hajras Shaker Saleh Email: hajsalsaleh@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : Introducing the student to the components of the various body tissues and cell components to enable the student to prepare for his future work.					
9. Teaching and Learning Strategies					
Strategy		- Brain storming - Feedback - Discussion - Team work			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Human physiology					
1	2	Providing students with information about the types of	:Introduction Overview of the methods used in histology, histology classification, and	-In attendance - Power point	-Discussion -Oral Exam

		human tissues	histological slide preparation.		
2	2	Knowing the parts of the cell process and their functions	Overview of cell structure and cell types.	-In attendance - Power point	-Report Preparation Discussion
3	2	Identify the tissues of the lymphatic system Lymphoid organs Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the lymphatic system Lymphoid organs Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the lymphatic system Lymphoid organs Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the lymphatic system Lymphoid organs Lectures and presentations Rapid daily, monthly and quarterly tests
4	2	Identify the tissues of the respiratory system Respiratory system Lectures and presentations Rapid daily, monthly and quarterly tests 5 2 Hours Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations	Identify the tissues of the respiratory system Respiratory system Lectures and presentations Rapid daily, monthly and quarterly tests 5 2 Hours Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the respiratory system Respiratory system Lectures and presentations Rapid daily, monthly and quarterly tests 5 2 Hours Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily, monthly and	Identify the tissues of the respiratory system Respiratory system Lectures and presentations Rapid daily, monthly and quarterly tests 5 2 Hours Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily,

		Rapid daily, monthly and quarterly tests		quarterly tests	monthly and quarterly tests
5	2	Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily, monthly and quarterly tests	Identify the tissues of the digestive system Digestive system/ Part one- Oral cavity Lectures and presentations Rapid daily, monthly and quarterly tests
6	2	Identify the tissues of the digestive tract	White Blood Cells: Classification, Specific Function ,Normal Value.	-In attendance - Power point	- Discussion -Comparison with the previous lecture
7	2	knowing connective Tissue proper Connective Tissue proper (General C.T.)	knowing connective Tissue proper Connective Tissue proper (General C.T.)	-In attendance - Power point	- Report Preparation
8	2	Learn about cartilage growth and cartilage repair. Cartilage, Histogenesis , Growth and repair of cartilage	Learn about cartilage growth and cartilage repair. Cartilage, Histogenesis, Growth and repair of cartilage	-In attendance - Power point	- Discussion - Oral Exam

9	2	Knowing the bones and how bone is formed	Bone & Histogenesis of Bone	-In attendance - Power point	- Discussion - Oral Exam
10	2	Identify blood tissue	The blood	-In attendance - Power point	- Group Discussion
11	2	Identify the blood forming organ and blood cell formation The hemopoietin organ (bone marrow), Formation of blood cells	Identify the blood forming organ and blood cell formation The hemopoietin organ (bone marrow), Formation of blood cells	-In attendance - Power point	- Short Exam
12	2	Knowing the Muscular tissues, their types and composition Muscular tissue	Knowing the Muscular tissues, their types and composition Muscular tissue	-In attendance - Power point	- Group Report Preparation
13	2	Knowing the nervous system, its types Nervous tissue: Overview of nervous system (CNS & PNS)	Knowing the nervous system, its types Nervous tissue: Overview of nervous system (CNS & PNS)	-In attendance - Power point	- Oral Exam - Discussion
14	2	Identifying neurons,	Identifying neurons, their types and	-In attendance - Power point	- Group Discussion

		their types and classification Nervous system: the Nerve cells (neurons) and their classification	classification Nervous system: the Nerve cells (neurons) and their classification		
15	2	Know the support cells in the nervous system Supporting cells of nervous system	Know the support cells in the nervous system Supporting cells of nervous system	-In attendance - Power point	-Short Exam - Group -Report Preparation

11. Learning and Teaching Resources :

The following evaluation methods are adopted:

1. Quizzes: To assess weekly comprehension.
2. Monthly and Oral Exams: To evaluate understanding and reasoning.
3. Practical Examinations: To assess laboratory performance and precision.
4. Reports and Assignments: To measure research and analytical skills.
5. Final Examination (Theoretical & Practical): To assess overall understanding of the course.

Distribution of grades:

1. Attendance and Participation – 5 marks
2. Daily and Oral Tests – 5 marks
3. Monthly and Written Exams – 20 marks
4. Laboratory Reports and Activities – 10 marks
5. Final Theoretical Exam – 40 marks
6. Final practical Exam – 20 marks

12. Learning and Teaching Resources:

Required textbooks (curricular books, if any)	James S. Lowe, Peter G. Anderson - Stevens & Lowe's Human Histology-Mosby (2015)
Main references (sources)	James S. Lowe, Peter G. Anderson - Stevens & Lowe's Human Histology-Mosby (2015).

Recommended books and references (scientific journals, reports...)	Victor p. Eroschenko, difiore's atlas of histology with functional correlations eleventh edition
Electronic References, Websites	- https://www.cancer.gov/publications/dictionaries/cancer-terms/def/histology .

Academic description of Human Hitologylogy 1 - Second Stage

Signature :

Name : Dr.. Hajras Shaker Saleh

Course Description Form

1. Course Name: Medical Parasitology 1					
2. Course Code: MTM2205					
3. Semester / Year: 1 st semester /2025 -2026					
4. Description Preparation Date: 07/10/2025					
5. Available Attendance Forms: Morning/evening					
6. Number of Credit Hours (Total) 30 h / Number of Units (Total) 4 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Louay Abbas Faisel Email: alsahlani.louay@gmail.Com					
8. Course Objectives					
Course Objectives			• A knowledge: •- It is to provide an idea and basic inform at about Helminthes and Entomology; diseases they cause and develop the student's ability and skill understanding their pathological analyses. 2- The student learns the skill, how and which parasites are located - 3- The student learns the skill of conduct pathological examinations and different method diagnosis. - Evaluation methods 1- Conducting daily qu exams Quizzes 2- Conducting monthly exams 3- Conducting semester and final exams 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
16	2T + 4 P	The student will learn about helminths; Host; Zoonosis; Host-parasite Relationships; Life Cycle of	Platyhelminthes general: Characters. Class cestoda: General characters. Teania saginata: Teania solium: Morphology & the adult	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

		helminthes; Sources of Infection; Modes of Infection; Pathogenesis; Infection; Laboratory Diagnosis	warm and the larval stages of each species, biology, life cycle of each species, pathogenicity of each species, Lab. Diagnosis		
17	2T + 4 P	The student learns the general characteristics of helminthes; structure; reproduction; life cycle; classification	Hymenolepis nana Hymenolepis diminuta. Dipylidium caninum, Diphyllobothrium latum, Biology, morphology, pathogenicity of each species, Lab. Diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
18	2T + 4 P	The student learns the general characteristics of Echinococcus; structure; reproduction; life cycle;	Echinococcus granulosus Echinococcus multilocularis. Biology, life cycle, pathogenicity, medical importance of hydatid cyst disease, Lab. Diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
19	2T + 4 P	The student learns the general characteristics of Schistosoma species; structure; reproduction; life cycle; habitat, distribution. lab diagnosis	. Class Trematoda :general characters. Genus Schistosoma. Species of human schistosoma, life cycle. Schistosoma	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
20	2T + 4 P	The student will learn Fasciola hepatica Biology, life cycle, pathogenicity, Lab diagnosis	Fasciola hepatica Biology, life cycle, pathogenicity, Lab	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
21	2T + 4 P	The student learns the general characteristics of Ascaris lumbricoides & Enterobius vermicularis structure; reproduction; life cycle; habitat, distribution. lab diagnosis	. Ascaris lumbricoides, Enterobius vermicularis. Biology of adult worm, life cycle, pathogenicity and medical importance of each species, Lab. Diagnosis of each species diagnosis.	- Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

22	2T + 4 P	The student learns the general characteristics of Trichuris Trichora & Trichenala spiralis; reproduction; life cycle and lab. Diagnosis.	Trichuris ,Trichenala spiralis. Biology , life cycle , pathogenicity, medical importanceof each species, Lab. Diagnosis of each species	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
23	2T + 4 P	To learn about Genus Strongyloids stercolaris biology, forms of helminthes, life cycle, Lab. Diagnosis.	Stroygloids stercolaris Biology, life cycle, pathogenicity, medical importance, Lab. Diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
24	2T + 4P	The student learns the general characteristics of Ancylostoma duodenal, nector, Americans (Hooks worm) Biology, life cycle, pathogenicity, medical importance of each species, Lab. Diagnosis.	Ancylostoma duodenal, nector, Americans (Hooks worm) Biology, life cycle, pathogenicity, medical importance of each species, Lab. Diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
25	2T + 4P	To learn about Genus filarial species biology, forms of helminthes, life cycle, Lab. Diagnosis.	The filariae Biology,Pathgenicity and medical importance of each species, Lab. Diagnosis of each species. Visceral larvae migrance, Cutaneous larvae migrance	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

26	2T + 4P	The student learns the general characteristics of Entomology	Entomology	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
27	2T + 4P	The student learns the general characteristics of Sand fly & Black fly	Sand fly , Black fly	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

28	2T + 4P	To learn about Mosquitoes	Mosquitoes	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
29	2T + 4P	To learn about Ticks & Mites. Features and appearance	Ticks & Mites	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
30	2T + 4P	To learn about Fleas; Features and appearance	Fleas	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - 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. Essentials of Medical Parasitology 2. Principle of Medical Physiology 3. Pinker book 2018
Main references (sources)	Medical Parasitology: A Self-instructional T
Recommended books and references (scientific journals, reports...)	1- NCBI 2- PubMed 3- You tube
Electronic References, Websites	Mehlhorn, Heinz, ed. "Encyclopedic reference parasitology: Biology, structure, function." (2001).

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Biochemistry 2

1. Course Name :					
Biochemistry 2					
2. Course Code:					
MTML2102					
3. Semester / Year:					
Fourth semester/second academic year (4/2)					
4. Description Preparation Date:					
٢٠٢٦-٢٠٢٥					
5. Available Attendance Forms:					
Personal attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours(30 Hours Theoretical + 60 Hours Practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Eyad Ali Othman			Email: dr.ieadothman@gmail.com Eyad-othman@alayen.edu.iq		
8. Course Objectives					
Course Objectives : The students able to : - General goal: To give an idea and basic information in clinical chemistry and develop skills The student's skill in pathological analyses. - Specific objective: For the student to be able to perform clinical examinations and be knowledgeable Preparing different solutions					
9. Teaching and Learning Strategies					
Strategy		- Enhance students' understanding of the basics of life chemistry and its applications. - Developing students' critical and analytical thinking. - Preparing students to link theoretical and practical concepts and use them in daily life and professional disciplines.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Syllabus of Theoretical part for Biochemistry 2

	2	- The student gets important information about hormones.	Hormones Classification functions Metabolism. (Its receptors and types receptors and degradation)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
2	2	- The student gets important information about hormones.	Hormones Classification functions Metabolism. (Its receptors and types receptors and degradation)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	exam and direct questions in class.
3	2	- The student gets important information about hormones.	Hormones Classification functions Metabolism. (Its receptors and types receptors and degradation)	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
4	2	- The student learns about the structure of proteins and the types of amino acids	Proteins: Structures and Functions of proteins enzyme. Amino acids peptides. Structure and metabolism of proteins (Globular proteins Fibrous proteins enzymes Myoglobin and hemoglobin)	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
5	2	- The student learns about the structure of proteins and the types of amino acids	Proteins: Structures and Functions of proteins enzyme. Amino acids peptides. Structure and metabolism of proteins (Globular proteins Fibrous proteins enzymes Myoglobin and hemoglobin)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
6	2	- The student learns about the structure of proteins and the types of amino acids	Proteins: Structures and Functions of proteins enzyme. Amino acids peptides. Structure and metabolism of proteins (Globular proteins Fibrous proteins enzymes Myoglobin and hemoglobin)	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
7	2	The student learns how the body metabolizes nitrogenous bases necessary to build nucleic acids	Metabolism of purine and pyrimidine	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
8	2	The student learns how the body metabolizes nitrogenous bases necessary to build nucleic acids	Metabolism of purine and pyrimidine	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
9	2	Types of vitamins biochemical reactions	Vitamins types and Biochemical reactions.	2- The teacher delivers lectures in	Oral exam and direct questions

				detail.	in class.
10	2	Types of vitamins and biochemical reactions	Vitamins types and Biochemical reactions.	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
11	2	The student learns about the types of minerals and their importance	Minerals: • Definition, Classification • Dietary sources • Functions • Absorption, synthesis, metabolism, storage and excretion.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
12	2	The student learns about the types of minerals and their importance	Minerals: • Definition, Classification • Dietary sources • Functions • Absorption, synthesis, metabolism, storage and excretion.	2- The teacher delivers lectures in detail.	Oral exam and direct questions in class.
13	2	The student learns about the types of minerals and their importance	Minerals: • Definition, Classification • Dietary sources • Functions • Absorption, synthesis, metabolism, storage and excretion.	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	Oral exam and direct questions in class.
14	2	The student learns about nucleotides metabolized in the body and the purine and pyrimidine nitrogen bases needed to build nucleic acids.	Metabolism of Nucleotides Contents • Purine nucleotides Metabolism • Denovo synthesis of purine nucleotides • Salvage pathways of purine nucleotides • Catabolism of purine nucleotides Pyrimidine nucleotide Metabolism • Denovo synthesis of pyrimidine nucleotides • Salvage pathways of pyrimidine nucleotides • Catabolism of pyrimidine nucleotides	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	Oral exam and direct questions in class.
15	2	The student learns about nucleotides metabolized in the body and the purine and pyrimidine nitrogen bases needed to build nucleic acids.	Metabolism of Nucleotides Contents • Purine nucleotides Metabolism • Denovo synthesis of purine nucleotides • Salvage pathways of purine nucleotides • Catabolism of purine nucleotides Pyrimidine nucleotide Metabolism • Denovo synthesis of pyrimidine nucleotides • Salvage pathways of pyrimidine nucleotides • Catabolism of pyrimidine nucleotides	2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
Syllabus of The Practical Course of Biochemistry 2					
1	4	To detect the amino acids tryptophan and sulfur containing amino acids such as cysteine	Hopkins-Cole Test, Lead acetate Test	Explain and then have the students work in groups	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work

					reports.
2	4	The student is able to titrate acidic or basic solutions and determine the concentration of acid or base in the sample. And determine the equivalence point.	Gerengross test and Amino acids Titration Curve	Explain and then have the students work in groups	1-Multiple choice questions.
3	4	Identify fats	Lipids tests	Explain and then have the students work in groups	2- Oral exam and direct questions in class.
4	4	It is used to detect oil fats and glycerin involved in the composition of greases	Ethanol emulsion Test, Acrolein Test, Sudan IV	Explain and then have the students work in groups	3- Laboratory work reports.
5	4	Enables the student to evaluate the quality of oils and fat	Acid Value, Peroxide Value and Saponification Value	Explain and then have the students work in groups	1-Multiple choice questions.
6	4	Determine the number of double bonds in lipids	Iodine Value and Libermann-Burchard Method).	Explain and then have the students work in groups	2- Oral exam and direct questions in class.
7	4	Identifying nucleic acids	Nucleic acids	Explain and then have the students work in groups	3- Laboratory work reports.
8	4	To measure the concentration of acids and compounds in the sample	Diphenylamine Method, Fiske-Subbarao Method	Explain and then have the students work in groups	1-Multiple choice questions.
9	4	The student was able to measure the concentration of nucleic acid (DNA or RNA) in the sample	Bial's orcinol Method and Quantitation of DNA by A260 nm	Explain and then have the students work in groups	2- Oral exam and direct questions in class.
10	4	The student is able to detect the presence of proteins in the sample	Proteins Biuret protein assay and Folin-Lowry Method	Explain and then have the students work in groups	3- Laboratory work reports.
11	4	The student is able to measure the concentration of proteins in the sample	Bradford Method and Microkjeldahl Method	Explain and then have the students work in groups	1-Multiple choice questions.
12	4	Through it, the student will be able to identify the chemical properties of proteins and contribute to studies of protein interactions and separation	Isoelectric Point (pI)	Explain and then have the students work in groups	2- Oral exam and direct questions in class.
13	4	Identify enzymes	Enzymology	Explain and then have the students work in groups	3- Laboratory work reports.
14	4	This test is used to	Alkaline Phosphatase assay and Acid	Explain and then have the students work in groups	1-Multiple

		evaluate the health of your liver and bones. may help detect liver disorders such as hepatitis or bile duct obstruction, as well as diseases that affect bones such as fracture osteoporosis, or diseases that lead to bone overactivity.	phosphatase assay.	students work in groups	choice questions.
15	4	To detect the ability to decompose sugars in body and the activity of urea-splitting enzymes in ammonia	β -amylase assay and Urease assay	Explain and then have the students work in groups	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam

11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes
2. Monthly Exams
3. Practical Exams
4. Reports
5. Final Exam
- 6.
- 7.

Distribution of grades:

1. Daily tests (10 marks)
2. Monthly exams (20 marks)
3. Activities and reports (10 marks)
4. Final practical exam (20 marks)
5. Final theoretical exam (40 marks)
- 6.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1- Clinical Biochemistry Lecture notes .Geoffrey Beckett. Ninth Edition. A

	John Wiley & Sons, Ltd., Publication 2-Text book of Biochemistry for medical students Prasad R Manjeshwar. Revised Furth Edition 2016
Recommended books and references (scientific journals, reports...)	١- Harper's Illustrated. Biochemistry. LANGE medical book Twenty-sixth edition. Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. F well, PhD ٢-Lippincott's. Illustrated Reviews: Biochemistry. Fifth Edition
Electronic References, Websites	

Academic description of Biochemistry 2 - second Stage

Signature :

Name : dr.Eyad Ali Othman

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for General Human Histology2

1. Course Name :					
General Human Histology 2					
2. Course Code:					
MTML 2104					
3. Semester / Year:					
Third course / Second stage (3/2)					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
٦0 Hours (30 hours for theoretical + ٣0 for practical) / 3 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Hajras Shaker Saleh Email: hajsalsaleh@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : Introducing the student to the components of the various body tissues and cell components to enable the student to prepare for his future work.					
9. Teaching and Learning Strategies					
Strategy		- Brain storming - Feedback - Discussion - Team work			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Human physiology					
1	2 Hours	Identify the tissues of the Vascular system	Circulatory system	Lectures and presentations	Rapid daily, monthly and quarterly tests

2	2 Hours	Identify the tissues of the lymphatic system	Lymphoid system- Lymphatic vessels- Lymph	Lectures and presentations	Rapid daily, monthly and quarterly tests
3	2 Hours	Identify the tissues of the lymphatic system	Lymphoid organs	Lectures and presentations	Rapid daily, monthly and quarterly tests
4	2 Hours	Identify the tissues of the respiratory system	Respiratory system	Lectures and presentations	Rapid daily, monthly and quarterly tests
5	2 Hours	Identify the tissues of the digestive system	Digestive system/ Part one- Oral cavity	Lectures and presentations	Rapid daily, monthly and quarterly tests
6	2 Hours	Identify the tissues of the digestive tract	Digestive system/ Part two-Gastrointestinal tracts	Lectures and presentations	Rapid daily, monthly and quarterly tests
7	2 Hours	Identify the tissues of the accessory organs of the digestive system	Digestive system/ Part three-Accessory Glands	Lectures and presentations	Rapid daily, monthly and quarterly tests
8	2 Hours	Identify the tissues of the urinary system	Urinary system	Lectures and presentations	Rapid daily, monthly and quarterly tests
9	2 Hours	Identify the tissues of the urinary system	Urinary system	Lectures and presentations	Rapid daily, monthly and quarterly tests

10	2 Hours	Identify the tissues of the endocrine glands	Endocrine system	Lectures and presentations	Rapid daily, monthly and quarterly tests
11	2 Hours	Identify the tissues of the endocrine glands	Endocrine system	Lectures and presentations	Rapid daily, monthly and quarterly tests
12	2 Hours	Identify the tissues of the male reproductive system	Male reproductive system	Lectures and presentations	Rapid daily, monthly and quarterly tests
13	2 Hours	Identify the tissues of the female reproductive system	Female reproductive system	Lectures and presentations	Rapid daily, monthly and quarterly tests
14	2 Hours	Identify the tissues of the sensory organs	Sense organ	Lectures and presentations	Rapid daily, monthly and quarterly tests
15	2 Hours	Identify the tissues of the skin	The integumentary system- Skin	Lectures and presentations	Rapid daily, monthly and quarterly tests

11. Learning and Teaching Resources :

The following evaluation methods are adopted:

1. Quizzes: To assess weekly comprehension.
2. Monthly and Oral Exams: To evaluate understanding and reasoning.
3. Practical Examinations: To assess laboratory performance and precision.
4. Reports and Assignments: To measure research and analytical skills.
5. Final Examination (Theoretical & Practical): To assess overall understanding of the course.

Distribution of grades:

1. Attendance and Participation – 5 marks
2. Daily and Oral Tests – 5 marks
3. Monthly and Written Exams – 20 marks
4. Laboratory Reports and Activities – 10 marks
5. Final Theoretical Exam – 40 marks
6. Final practical Exam – 20 marks

12.Learning and Teaching Resources:

Required textbooks (curricular books, if any)	James S. Lowe, Peter G. Anderson - Stevens & Lowe's Human Histology-Mosby (2015)
Main references (sources)	James S. Lowe, Peter G. Anderson - Stevens & Lowe's Human Histology-Mosby (2015).
Recommended books and references (scientific journals, reports...)	Victor p. Eroschenko, difiore's atlas of histology with functional correlations eleventh edition
Electronic References, Websites	- https://www.cancer.gov/publications/dictionaries/cancer-terms/def/histology .

Academic description of General Human Histology2- Second Stage

Signature :

Name : Dr.. Hajras Shaker Saleh

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Molecular Biology

1. Course Name:					
Molecular Biology					
2. Course Code:					
MTML2206b					
3. Semester / Year:					
Fourth semester, second academic year					
4. Description Preparation Date:					
2025-2026					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
60 hours (30 hours theoretical + 30 hours practical) (2/4)					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Salam Hussein Ewaid Email: salam.hussein@alayen.edu.iq					
8. Course Objectives					
Course Objectives: The students able to: • Define basic concepts in molecular biology, explain cellular processes, and explore functions of biomolecules. • Introduce students to the genetic basis of disease and molecular mechanisms underlying various physiological processes. • Introduce students to components of cells, focusing on molecular structures, DNA, RNA, and proteins, preparing them for future research projects. • Understand the complex mechanisms of cellular and molecular systems.					
9. Teaching and Learning Strategies					
Strategy	• Develop a comprehensive understanding of molecular biology concepts. • Describe and analyze molecular components in the laboratory. • Develop problem-solving skills by addressing and correcting experimental errors. • Gain practical experience using molecular biology materials. • Optimize the use of molecular biology laboratory tools. • Conduct and replicate practical experiments, strengthening practical skills. • Participate actively in class discussions about molecular biology. Send feedback				
10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
Syllabus of Theoretical part for Molecular Biology					
1	۲	Understanding the lecture topic and its benefits	Introduction to Molecular Biology applications in Med. Laboratory Techniques specialization	Weekly lectures, PowerPoint presentations, and brainstorming	Oral questions, quizzes, monthly and semester exams
2-4	۲	//	Structure of (DNA) -Primary structure -Secondary structure -Tertiary structure and chromosome packing -Structure of (RNA)	//	//
5	۲	//	DNA replication and replication Models	//	//
6	۲	//	DNA Transcription and post transcriptional modification processes	//	//
7	۲	//	translation and post translational modifications and protein synthesis	//	//
8	۲		Gene expression, genetic code and applications of genetic code	//	//
9	۲	//	DNA damage, types and repair systems and mechanisms	//	//
10-12	۲	//	DNA mutations, chromosomal aberrations and causes of gene mutations	//	//
13	۲	//	programmed cell death, telomere and telomerase association with carcinogenesis	//	//
14-15	۲	//	Introduction to Recombinant DNA technology 1- Restriction enzymes 2- Cloning vectors Applications in Molecular cloning	//	//
Syllabus of Practical part for Molecular Biology					
۱	۲	//	Laboratory Equipment and materials used in Molecular Biology Laboratory	//	//
2-4	۲	//	DNA isolation (week 2) DNA extraction (week 3) RNA isolation Quantification of DNA & RNA concentration with Nanodrop, (week 4)	//	//
5	۲	//	Agarose gel electrophoresis	//	//
6	۲	//	Polymerase chain reaction (PCR) steps	//	//
7	۲	//	Polyacrylamide gel electrophoresis (PAGE)	//	//

8	٢	//	Hybridization techniques	//	//
9	٢	//	Comet assay	//	//
10-12	٢	//	Introduction to Bioinformatics and DNA sequencing	//	//
13	٢	//	RFLP technique	//	//
4-15	٢	//	Brief outline on molecular cloning techniques	//	//

11. Course Evaluation

The following evaluation methods are adopted:

The grade is distributed out of 100 based on the student's assigned tasks, such as daily preparation, daily, oral, and monthly exams, written exams, reports, etc. The following assessment methods are used: 1. Annual exams to assess overall knowledge in molecular biology. 2. Monthly exams to assess understanding and application of current topics. 3. Daily quizzes to reinforce regular comprehension. 4. Daily oral creative questions to encourage critical thinking and practical application.

Distribution of grades:

Monthly exam: 40 marks / 20 marks for the theoretical part, 15 marks for the practical part, and 5 marks for the daily assessment. • Final exam: 60 marks / 25 marks for the practical part, and 35 marks for the theoretical part.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Molecular Biology of the Gene
Main references (sources)	No
Recommended books and references (scientific journals, reports...)	No
Electronic References, Websites	No

Academic description of Molecular Biology – 2nd Stage

Signature:

Name: Prof. Salam Hussein Ewaid

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Medical Bacteriology 2

1. Course Name :	Medical Bacteriology 2
2. Course Code:	MTML2201
3. Semester / Year:	4/2
4. Description Preparation Date:	2025-2026
5. Available Attendance Forms:	Attendance
6. Number of Credit Hours (Total) / Number of Units (Total):	90/4
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Asaad Abbas Jlood Email: Asaad.jlood@alayen.edu.iq	
8. Course Objectives	
Course Objectives : The students able to : • Enable students to recognize and classify Gram-negative cocci with emphasis on <i>Neisseria gonorrhea</i> and <i>Neisseria meningitides</i>, including their morphology, cultural characteristics, and pathogenicity. • Develop the ability to identify enteric Gram-negative rods such as <i>E. coli</i>, <i>Klebsiella</i>, <i>Proteus</i>, <i>Pseudomonas</i>, <i>Acinetobacter</i>, <i>Shigella</i>, and <i>Salmonella</i> using selective and differential culture media. • Train students in performing and interpreting biochemical tests and API systems for accurate bacterial identification. • Provide knowledge on the initial identification of special Gram-negative bacteria including <i>Yersinia</i>, <i>Vibrio cholerae</i>, <i>Campylobacter</i>, and <i>Helicobacter</i> species. • Introduce the diagnostic features of fastidious and zoonotic pathogens such as <i>Haemophilus</i> and <i>Brucella</i>. • Explain the morphology, pathogenesis, and laboratory detection of atypical or intracellular bacteria, including <i>Chlamydia</i>, <i>Mycoplasma</i>, <i>Rickettsia</i>, and <i>Spirochetes</i>. • Provide principles for acid-fast staining and identification of Mycobacterium tuberculosis (MTB) and related species. • Integrate theoretical and practical knowledge to interpret clinical results and correlate them with disease pathophysiology. • Reinforce biosafety principles and aseptic techniques essential in handling pathogenic bacteria.	

9. Teaching and Learning Strategies

Strategy	• Theoretical Lectures: Delivered through interactive PowerPoint presentations, case-based learning, and visual explanation of pathogens. • Laboratory Sessions: Hands-on training in specimen culture, staining, colony morphology observation, and biochemical testing for <i>Neisseria</i>, enteric rods, and special bacteria. • Selective & Differential Media Practice: Cultivation on MacConkey agar, EMB, SS agar, TCBS, and Chocolate agar with interpretation of growth characteristics. • Biochemical and API Training: Performing and interpreting IMViC, oxidase, urease, TSI, catalase, and API-20E tests for bacterial differentiation. • Case-Based Discussions: Clinical correlation of lab findings for <i>Salmonella</i>, <i>Vibrio cholerae</i>, <i>Brucella</i>, and <i>Mycobacterium tuberculosis</i>. • Multimedia and Microscopy Demonstrations: Digital images and microscope sessions showing Gram-negative rods, cocci, and acid-fast bacilli. • Student Assessments – Continuous evaluation through quizzes, practical reports, and oral questioning. • Emphasis on Biosafety: Reinforcing aseptic technique and waste decontamination in every practical class.
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10. Course Structure for medical Bacteriology 2

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Medical Bacteriology 2					
1	6	Students will identify morphological and cultural characteristics of <i>Neisseria</i> spp. and perform oxidase test accurately	Gram negative cocci: <i>Neisseria</i>	Lecture + lab training + microscopy demonstration	Practical quiz + lab report + oral questioning
2	6	Students will differentiate enteric bacteria using biochemical tests and media result	Enteric Gram-negative rods: <i>E. coli</i>	Lecture + lab practice + class discussion	Practical exam + lab report + short quiz
3	6	Students will differentiate enteric bacteria using biochemical tests and media result	Enteric Gram-negative rods: <i>Klebsiella</i>	Lecture + lab practice + class discussion	Practical exam + lab report + short quiz
4	6	Students will differentiate enteric bacteria using biochemical tests and media result	Enteric Gram-negative rods <i>Proteus</i> <i>Pseudomonas</i> ,	Lecture + lab practice + class discussion	Practical exam + lab report + short quiz
5	6	Students will differentiate enteric bacteria using biochemical tests and media result	Enteric Gram-negative rods <i>Acinetobacter</i> , <i>Shigella</i> and <i>salmonella</i>	Lecture + lab practice + class discussion	Practical exam + lab report + short quiz

6	6	Students will identify <i>Yersinia</i> based on morphology and biochemical test	<i>Yersinia</i>	Lecture + lab practice + discussion	Practical + short quiz
7	6	Students will culture <i>Vibrio cholerae</i> on TCBS agar and explain its pathogenic mechanism	<i>Vibrio</i>	Lecture + lab practice + multimedia	Practical + case discussion
8	6	Students will describe growth requirements and identify positive biochemical reaction	<i>Campylobacter</i>	Lecture + microscopy + lab training	Lab evaluation + practical quiz
9	6	Students will describe growth requirements and identify positive biochemical reaction	<i>Helicobacter.</i>	Lecture + microscopy + lab training	Lab evaluation + practical quiz
10	6	Students will explain growth factors for <i>Haemophilus</i> and isolation methods	<i>Haemophilus</i>	Lecture + practical + clinical discussion	Practical + short quiz
11	6	Students will explain growth and isolation methods	<i>Bordetella</i> and <i>Brucella</i>	Lecture + practical + clinical discussion	Practical + short quiz
12	6	Students will identify <i>Chlamydia</i> and describe serological detection methods.	<i>Chlamydia</i>	Lecture + practical + clinical discussion	Practical + short quiz
13	6	Students will identify spirochetes microscopically and describe serological detection methods.	<i>Spirochaetes</i>	Lecture + practical + clinical discussion	Practical + short quiz
14	6	Students will perform acid-fast staining and interpret colony morphology	<i>Mycobacterium</i>	Lecture + practical + clinical discussion	Practical + short quiz
15	6	Students will describe features of these atypical bacteria and	<i>Mycoplasma</i> + <i>Rickettsia</i>	Lecture + practical + clinical discussion	Practical + short quiz

11. Course Evaluation

The following evaluation methods are adopted:

1. Quizzes: To assess weekly comprehension.
2. Monthly and Oral Exams: To evaluate understanding and reasoning.
3. Practical Examinations: To assess laboratory performance and precision.
4. Reports and Assignments: To measure research and analytical skills.
5. Final Examination (Theoretical & Practical): To assess overall understanding of the course.

Distribution of grades:

1. Attendance and Participation – 5 marks
2. Daily and Oral Tests – 5 marks
3. Monthly and Written Exams – 20 marks
4. Laboratory Reports and Activities – 10 marks
5. Final Theoretical Exam – 40 marks
6. Final practical Exam – 20 marks

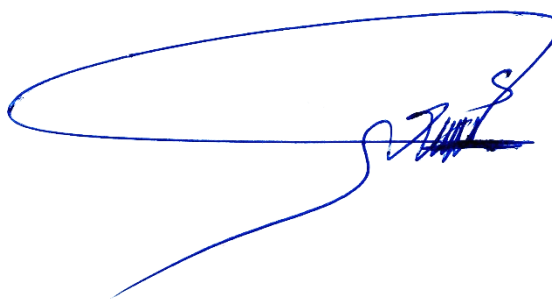
12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Required Textbooks (Curricular Books) 1. Forbes, B. A., Sahm, D. F., & Weissfeld, A. S. (2022). <i>Bailey & Scott's Diagnostic Microbiology</i> (15th Edition). Elsevier. – The main approved textbook for teaching <i>Medical Bacteriology</i> in the second stage. – Covers diagnostic foundations, culture methods, antibiotic susceptibility testing, and laboratory diagnosis of bacterial diseases. 2. Jawetz, E., Melnick, J., & Adel berg, E. (2024). <i>Medical Microbiology</i> (28th Edition). McGraw-Hill Education. – A supporting curricular textbook covering theoretical and clinical aspects of bacterial diseases, pathogenesis mechanisms, and bacterial immunity.
Main references (sources)	• Chees brough, M. (2019). <i>District Laboratory Practice in Tropical Countries</i> (2nd Edition). Cambridge University Press. – A practical reference for laboratory techniques, culture media preparation, sterilization, and Gram staining. • Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2021). <i>Medical Microbiology</i> (10th Edition). Elsevier.

	– A comprehensive scientific reference linking bacterial pathogens to their corresponding clinical manifestations. • Prescott, L. M., Harley, J. P., & Klein, D. A. (2021). <i>Microbiology</i> (11th Edition). McGraw-Hill Education. – Supports concepts of bacterial physiology, growth, and genetics.
Recommended books and references (scientific journals, reports...)	1. Levinson, W. (2023). <i>Review of Medical Microbiology and Immunology</i> (17th Edition). McGraw-Hill Education. – An important review book for exam preparation, presenting key concepts in a question-and-answer format. 2. Tortora, G. J., Funke, B. R., & Case, C. L. (2022). <i>Microbiology: An Introduction</i> (14th Edition). Pearson. – A supportive reference explaining general microbiology principles in a simplified, illustrated manner. 3. World Health Organization (WHO). (2020). <i>Laboratory Biosafety Manual</i> (4th Edition). Geneva: WHO Press. – An internationally recognized manual for biosafety procedures in microbiological laboratories. 4. Clinical and Laboratory Standards Institute (CLSI) Guidelines (2023). – Provides the latest standards for antimicrobial susceptibility testing (AST) and interpretation. • <i>Journal of Clinical Microbiology (JCM)</i> – American Society for Microbiology (ASM) • <i>The Lancet Infectious Diseases</i> <i>Clinical Microbiology Reviews</i>
Electronic References, Websites	https://www.cdc.gov U.S. Centers for Disease Control and Prevention (CDC) – Provides infectious-disease diagnostic guidelines. https://www.who.int World Health Organization (WHO) – Contains the latest biosafety and vaccination protocols. https://www.asm.org American Society for Microbiology (ASM) – Educational resources and recent microbiology research. . https://pubmed.ncbi.nlm.nih.gov PubMed Database – Peer-reviewed articles and studies in medical bacteriology. https://www.clsi.org Clinical and Laboratory Standards Institute (CLSI) – Latest updates on antibiotic-susceptibility testing. https://microbiologyonline.org British Microbiology Society site – Visual and interactive educational materials for students.

Academic description of Medical Bacteriology 2
Stage: two

Signature:

A handwritten signature in blue ink, featuring a large, stylized 'S' shape followed by a smaller, more complex scribble.

Name: Dr. Asaad Abbas Jlood

Al-Ayen Iraqi University
College of Health and Medical Technology
Course Description form for Human physiology 2

1. Course Name :					
Human physiology 2					
2. Course Code:					
MTML2103					
3. Semester / Year:					
Fourth course / Second stage (4/2)					
4. Description Preparation Date:					
2025 - 2026					
5. Available Attendance Forms:					
In attendance					
6. Number of Credit Hours (Total) / Number of Units (Total):					
90 Hours (30 hours for theoretical + 60 for practical) / 4 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: MSC. Sarah Mousa Issa Email: sarahalsarraai@gmail.com					
8. Course Objectives					
Course Objectives : The students able to : Introducing students to the components of somatic cells and the various components of blood, enabling them to prepare for future work.					
9. Teaching and Learning Strategies					
Strategy	- Brain storming - Feedback - Discussion - Team work				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part for Human physiology 2					
1	2	Providing students information about human	Digestive Physiology: GIT: Part General Function, Food Movement, and	-In attendance - Power point	- Discussion - Oral Exam

		body organs	Control. Swallowing Reflex		
2	2	Knowledge of digestive system parts and functions	Digestive Physiology: GIT Chemical Digestion, Absorption, and Control. Defecation Reflex	-In attendance - Power point	- Report Preparation - Group Discussion
3	2	Knowledge of digestive system parts and functions	Digestive Physiology: Accessory Organs: Secretion and Their Role in Digestion. Secretion Control.	-In attendance - Power point	- Daily Exam - Discussion
4	2	Providing students with basic information about the chemical composition of urine.	General Functions of US. Urine: Definition and Normal Constituent. Physical and Chemical Property of Urine	-In attendance - Power point	- Group Discussion
5	2	Understanding the kidneys components, its functions, and the factors affecting it.	Role of Kidney in Urine Formation and Maintenance of Body Fluids and The Role In Acid- Base Balance.	-In attendance - Power point	- Discussion
6	2	Understanding the urinary tract, its functions, and the factors affecting it.	Urinary Tract: Parts and Function. Urine Hemodynamic and Control. Normal Urine Daily Volume and Factor Affecting.	-In attendance - Power point	Report Preparation - Discussion
7	2	Understanding the physiology of endocrine glands, their types, and their secretions. -Comparison between	Endocrine Physiology: Endocrine Glands Types and Secretion. Hormone: Types, Normal Value, Function and Control of Secretion.	-In attendance - Power point	- Oral Exam - Group Discussion

		hormone types			
8	2	Providing students with information about reproduction, and the organs of the male reproductive system.	Reproductive Physiology: Male Sex Physiology: Function of Genital Organs. Male Sex Hormones: Normal Value, Production, Control, and Their Role in Reproduction.	-In attendance - Power point	- Short Exam
9	2	Providing students with information about reproduction, and the organs of the female reproductive system.	Female Sex Physiology: Function of Genital Organs. Normal Value of Female Sex Hormone, Production, and Control. Female Cycle, Pregnancy, Parturition, and Lactation: Hormonal Fluctuation and Control.	-In attendance - Power point	Group Report Preparation
10	2	Developing students' scientific thinking to understand the mechanics of muscle fibers.	Muscles Physiology: Types and Functions. Generation of Action Potential, Contraction, and Sliding-Filament theory.	-In attendance - Power point	- Oral Exam - Discussion
11	2	-Understanding the nervous system. -Understanding the types of neurons.	Nervous Physiology: Neuroglia: Definition, Types, and Function. Neurons: Definition, Types, and Function. CSF: Composition, Function, and Clinical Importance	-In attendance - Power point	- Group discussion
12	2	- Providing students with	Generation of Action Potential. Neuronal	-In attendance - Power point	- Short quiz

		information about the concept of synapses and neural connections.	Conduction: Types and Speed. Synopsis: Types, and Function.		
13	2	Understanding the functions of the central nervous system.	CNS: Parts and Functions	-In attendance - Power point	- Group report preparation
14	2	- Identify the functions and functions of the peripheral nervous system.	Spinal Cord: Parts, General Functions, and Spinal Reflexes. PNS: Types and Function.	-In attendance - Power point	-Discussion
15	2	- Provide students with scientific knowledge of the term "human sensory system."	Sensory System: Classification and General Function. Special Sense Organs: Types and General Function	-In attendance -Power point	-Oral quiz

Syllabus of Practical part for Human physiology 2

1	4	- Training students on examining a urine sample and how to record the results.	Urine Sample: Importance, Method of Collection, Preparation, Transport and Storage Physical Examination of Urine Sample.	Laboratory team-work	-Oral quiz -lab. Work skills
2	4	- Training students on the steps of microscopic urine examination and recording the results.	Microscopic Examination of Urine: The identification of Epithelial Cells, Blood Cells, crystals, casts,...etc	Laboratory team-work	-Discussion -lab. Work skills
3	4	-Define bacteria - Training students on diagnosing	Microscopic Examination of Urine: The identification of Bacteria, Yeast,	Laboratory team-work	-Quiz -lab. Work skills

		bacteria, viruses, and yeasts in a urine sample.	Mucus, Casts,.... Etc.		
4	4	- Developing skills in examining and diagnosing a urine sample.	Repeat	Laboratory team-work	-Explanation -lab. Work skills
5	4	- Training students on chemical examination of a urine sample.- Earn working skills	Chemical Examination of Urine	Laboratory team-work	-Writing skills -lab. Work skills
6	4	-Define examination methods -Compare between the methods	Repeated	Laboratory team-work	-Discussion -lab. Work skills
7	4	- Training students on counting sperm in a sample under a microscope.	Semen Analysis: Type of Collection & Physical Examination	Laboratory team-work	-Oral quiz -lab. Work skills
8	4	- Training students on counting sperm in a sample under a microscope. -Earn working skills of examining a semen sample and distinguishing between sperm activity and potency.	Semen Analysis: Motility, Viability, &Morphology. Semen Analysis: Cell Counting Technique.	Laboratory team-work	-Oral quiz -lab. Work skills

9	4	- Enhancing students' performance skills in examining a semen sample.	Repeat Semen Analysis.	Laboratory team-work	-Reports -lab. Work skills
10	4	-Define blood group -Knowledge of its types	Blood Group	Laboratory team-work	-Oral quiz -lab. Work skills
11	4	-Earn working skills to use a stethoscope.- Earn working skills	Stethoscope and its uses.	Laboratory team-work	-Discussion -lab. Work skills
12	4	- Developing students' skills in measuring normal and abnormal blood pressure.	Blood Pressure	Laboratory team-work	-Discussion -lab. Work skills
13	4	- Enhancing students' skills in measuring blood pressure.	Repeated	Laboratory team-work	-Reports -lab. Work skills
14	4	-Define the topic	ESC	Laboratory team-work	-Evaluation of team work
15	4	-Understand the topic -Earn working skills	Body Temperature	Laboratory team-work	-Oral quiz -lab. Work skills

11. Course Evaluation

The following evaluation methods are adopted:

1. Month exam
2. Final exam
3. Quiz
4. Daily discussion
5. Reports writing

Distribution of grades:

1. The monthly exam : 40 marks/20 marks for theoretical part , 15 marks for practical part.
2. 5 marks for daily evaluation
3. The final exam: 60 marks / 25 marks for practical and 35 marks for theoretical

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Cindy L. Stanfield: Principles of Human Physiology, 6th edition Tortora, Gerard J.; Derrickson, Bryan H.: Principles of Anatomy and Physiology, Control Systems of the Human Body Vol. 3, 10th Edition
Recommended books and references (scientific journals, reports...)	Martin Caon (2020): Examination Questions and Answers in Basic Anatomy and Physiology, School of Health Sciences Flinders University Bedford Park , South Australia , Australia. Alkinany, Azza Sajid(2016) :. Introduction to Human Physiology, Dar Wael f Publishing m Amman
Electronic References, Websites	-Physiology Lecture Slides San Diego Miramar College. https://www.youtube.com/watch?v=dlHrbHN7udg -UO physiology lecture to explore mechanics of walking Oregon News.

Academic description of Human physiology - Second Stage

Signature :

Name :MSC. Sarah Mousa Issa