

1. Course Name:					
Metabolic disorder					
2. Course Code:					
3. Semester / Year:					
3 rd – First term–quarterly					
4. Description Preparation Date:					
05/01/2025					
5. Available Attendance Forms:					
Face to face					
6. Number of Credit Hours (Total) / Number of Units (Total):					
4 / 6					
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			- Introducing the student to the basic principles related to metabolic disorders in clinical chemistry familiarizing the student with them. - The curriculum includes topics on the theoretical practical foundations of laboratory tests in clinical chemistry for metabolic disorders of various diseases and the introduction of important experiments and 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 The Theoretical Course					
1	2	Define key terms such as water balance, dehydration, overhydration, and	Water Balance and Imbalance	interactive-visual	Exams and quizzes

		homeostasis.			
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 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 (e.g., supplementation, chelation therapy) in managing disorders of vitamin, trace element, and metal metabolism.	Trace elements and metals metabolism	interactive-visual	Exams and quizzes
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 cardiovascular disease, type 2 diabetes, and stroke.	Metabolic syndrome	interactive-visual	Exams and quizzes
12	2	Explain the biochemical pathways involved in protein, purine, and uric acid metabolism, including the synthesis and degradation of	Disorder of protein, Uric acid, gout and purine metabolism	interactive-visual	Exams and quizzes

		purines and the role of uric acid.			
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 porphyrias, including dietary changes, medications, and lifestyle modifications.	Disorders of haem metabolism: the porphyrias	interactive-visual	Exams and quizzes
15	2	Describe the pathophysiology of common cardiovascular disorders, including atherosclerosis, myocardial infarction, and heart failure.	Cardiovascular disorders	interactive-visual	Exams and quizzes

Syllabus of The Practical Course

1	2	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	2	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	2	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	2	Describe the principles behind laboratory techniques used for the estimation of zinc and iodine levels.	Estimation of Ze and I	interactive-visual	Oral-written quiz-practical application

5	2	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	2	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	2	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	2	Perform laboratory tests to measure amylase activity in blood or urine samples using methods such as the starch-iodine assay, the colorimetric method, or the enzyme activity assay.	Estimation of amylase enzyme	interactive-visual	Oral-written quiz-practical application
9	2	Identify the laboratory techniques used for the estimation of triglycerides and cholesterol, such as enzymatic assays.	Estimation of triglyceride cholesterol	interactive-visual	Oral-written quiz-practical application
10	2	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	2	Identify the methods used to estimate total protein (e.g., Biuret	Estimation of total protein and Albumin/Globulin Ratio	interactive-visual	Oral-written quiz-practical application

		method) and albumin (e.g., bromocresol green method).			
12	2	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	2	Interpret total iron, TIBC, and transferrin saturation results in the context of specific clinical conditions, such as anemia or hemochromatosis.	Estimation of Total iron and Iron binding capacity	interactive-visual	Oral-written quiz-practical application
14	2	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	2	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

Exams
Quiz
Report
Attendance
Class activity
Technical Practice

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Textbook of biochemistry (Sixth Edition) For Medical Students DM Vasudevan, Sreekumari S and Kan Vaidyanathan.
Main references (sources)	-Clinical Biochemistry Lecture Notes.Tenth EditionHoboken, NJ: Wiley, 2018. Peter Rae. M Crane. Rebecca Pattenden. - Biochemistry. Fourth Edition, 2013. Dr. 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	

Course Description Form

1. Course Name: Histopathology ¹					
2. Course Code:					
3. Semester / Year: 1 st semester /2024 -2025					
4. Description Preparation Date: 10/1/2025					
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: 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 • 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 Define Histopathology and historical overview; cell injury; protective responses; tissue repair; diagnostic	Introduction: History of pathology;	Lectures and practical lessons -Discussion	Theory exams - practical -

✓		Describe how the causes of pathogenesis; 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 formation; Stem cells; Factors that effected of healing. Morphology of healing; Phases; Pathogenicity and histologic features Of wound healing; Laboratory Diagnosis;	Tissue Repair (Healing): Two types of repair; Regeneration and Scar formation. Lab Diagnosis.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

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; causes 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 Cellular Adaptation of Growth and Differentiation; types of adaptations Hypertrophy, Atrophy, Hyperplasia, Metaplasia, Dysplasia and Lab Diagnosis of each types.	Cellular Adaptation of Growth and Differentiation	- Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
8	2T + 4 P	Interpret diagnostic cancer diseases who happen ;two Types of tumors, Benign tumor and malignant tumor; Nomenclature of tumor. ,Lab. Diagnosis, including microscopic examination.	Neoplasia When cancer is occurred in the epithelium cells called carcinoma, while if occurred in the connective tissue is called sarcoma. Benign tumors are suffix (Oma)	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
9	2T + 4 P	To Assess the effectiveness Diseases of immunity, No immune reaction against self-antigens= energy, Lab. Diagnosis.	Diseases of immunity; The function of the immune system is to protect the host from invasion of foreign organisms.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

10	2T + 4P	To learn about Nutritional diseases: Nutritional diseases are the nutrient-related conditions and diseases that cause illness in human. They may include deficiencies or excesses of at least one nutrient in the diet, obesity and eating disorder, and chronic diseases such as hypertension, cardiovascular disease, cancer, and diabetes mellitus. Nutrient Deficiencies and associated diseases.	Nutritional diseases: deficiencies or excesses of at least one nutrient in the diet, obesity; Nutritional disease and nutrient	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
11	2T + 4P	Describe the connection between Physical and Chemical Injuries Types of Physical injuries, Physical agents:- trauma extremes in the temperatures, radiation, electric shock and sudden changes in atmospheric pressure all are associated with cell injury; Chemical agents include concentrated glucose or salt and oxygen at high partial pressures. Various poisons cause damage by affecting their membrane permeability or the integrity of the enzymes. Environmental toxins as pollutants, insecticides, Co, and alcohol as well as drug can cause cell or tissue injury,	Physical and Chemical Injuries: different between types.	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.

1. Course Name: Advance technology					
2. Course Code:					
3. Semester / Year: Semester					
4. Description Preparation Date:13\1\2025					
5. Available Attendance Forms: theory					
6. Number of Credit Hours (Total) 30/ Number of Units (Total):15					
7. Course administrator's name (mention all, if more than one name)					
Name: PhD Harith Abdul Sahib Shareef					
Email: harith8aljabery@gmail.com					
8. Course Objectives					
Course ObjectivesIntroducing the student to the science of advanced technology related to microbiology, immunology, chemistry and blood diseases. • Teaching the student about modern technologies in advanced work methods used to diagnose diseases. • - The student will be able to master the knowledge of the most advanced technologies and how to deal with them according to the scientific use that ensures the safety of all workers in biological laboratories.					
9. Teaching and Learning Strategies					
Strategy		1- It enables students to gain knowledge and understanding of advanced technology in general. 2- It teaches the student to understand the materials he uses during work and conducting experiments. 3- It teaches the student to overcome errors during practical application in the laboratory.			
10. Course Structure					
Week	Hours	Required Learning	Unit or subject	Learning method	Evaluation

		Outcomes	name		method
Syllabus of The Theoretical Course					
1	2	The student define the top	Introduction about topic	In presence	Evaluate the lecture conduct Quiz
2	2	The student classify the top	Microbiology	In presence	Defend the lecture and conduct Quiz
3	2	The student describe the top	Safety and principles of sterilization	In presence	Select the lecture and conduct Quiz
4	2	The student explain the top	Collection, Transport Examination & reporting Specimens	In presence	Value the lecture and conduct Quiz
5	2	The student report the topic	Culturing of organisms	In presence	Analyze the lecture and conduct Quiz
6	2	The student select the topic	Conventional microbiology Techniques	In presence	Evaluate the lecture and conduct Quiz
7	2	The student translate the top	Biochemical testing of Microorganisms	In presence	Apply the lecture and conduct Quiz
8	2	The student identify the top	Serological diagnostic Technique	In presence	Understand the lecture and conduct Quiz
9	2	The student recognize the top	diagnostic techniques	In presence	Support the lecture and conduct Quiz
10	2	The student define the topic	Molecular diagnostic Technique	In presence	Evaluate the lecture and conduct Quiz
11	2	The student describe the top	Cell and tissue culture	In presence	Describe the lecture and conduct Quiz
12	2	The student explain the top	Cell fractionation	In presence	Separate the lecture and conduct Quiz
13	2	The student discusses the top	Separation techniques	In presence	Define the lecture and conduct Quiz
14	2	The student translate the top	Radio immune assay	In presence	Understand the lecture and conduct Quiz
15			Final exam		
Syllabus of The Practical Course					
1	2	The student discusses the topic and doing practical	Bacterial diagnosis (VIETIC System)	In presence	Apply the lecture joint work
2	2	The student translate the top and doing practical	Immunochromatography assays	In presence	Describe the lecture joint work
3	2	The student identify explain the topic and doing practical	ELISA technician	In presence	Evaluate the lecture joint work
4	2	The student the recognize top and doing practical	Supplementary	In presence	Analyze the lecture joint work
5	2	The student describe the top and doing practical	GUE exam	In presence	Separate the lecture joint work
6	2	The student define the class topic and doing practical	Supplementary	In presence	Define the lecture and joint work
7	2	The student explain the topic and doing practical	GSE exam	In presence	Understand the lecture joint work
8	2	The student discusses the top and doing practical	Tissue culture	In presence	Explain the lecture joint work
9	2	The student Analyze the top and doing practical	Supplementary	In presence	Remember the lecture joint work
10	2	The student explain the topic and doing practical	PCR Technician	In presence	Apply the lecture and joint work
11	2	The student Classify the top and doing practical	Supplementary	In presence	Classify the lecture joint work
12	2	The student define the topic doing practical	Molecular diagnostic techniques	In presence	Explain the lecture joint work
13	2	The student Explain the top	Separation techniques	In presence	Evaluate the lecture

		and doing practical			joint work
14	2	The student Separate explain the topic and doing practical	Nanotechnology	In presence	Separate the lecture joint work
15			Final exam		

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

Theory Tide test 20

Practical Tide test 10

Daily preparation 5

Practical work 5

Theory final exam 35

Practical final exam 25

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Diagnostic Criteria in generals practical laboratory techniques
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.
Recommended books and references (scientific journals, reports...)	Journal of medical laboratory technology in general objective.
Electronic References, Websites	http://www.healthline.com/health/practicals

1. Course Name:					
Immunology(1)					
2. Course Code:					
3. Semester / Year:					
3 rd – First term–quarterly					
4. Description Preparation Date:					
2025\01\20					
5. Available Attendance Forms:					
Face to face\Online					
6. Number of Credit Hours (Total) / Number of Units (Total):					
60					
7. Course administrator's name (mention all, if more than one name)					
Dr. Mohammad Hadi Mortada mortada56@gmail.com					
8. Course Objectives					
Course Objectives			Knowing the immune system KnowHow is it done the coordination cooperation between immune cells Knowing the work of each immune cell Knowing the work of the antibody • Knowing and classifying the antigen		
9. Teaching and Learning Strategies					
Strategy		Displaying scientific content on the projector Using the graph as a means of explanation on the projector Using the necessary images and videos on the projector			
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,	interactive-visual	Oral quiz

			innate and adaptive immunity		
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, Haematopoiesis, 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, Haematopoiesis, phagocytosis, lymphoid tissues	interactive-visual	Oral quiz
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 types, properties, and monoclonal antibodies	Antibody: definition, structures, classes, properties, and monoclonal Ab formation.	interactive-visual	Oral quiz
7	2	Education the methods of creating antibodies (laboratory manufacturing)	Generation of antibody diversity.	interactive-visual	Oral quiz

8	2	Education the 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	Oral 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 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
14	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			
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	The Methods 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-practical application
3	2	The Methods for determining concentrations, 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-practical application

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	Oral-written quiz-practical application
15	2	Understand Blood grouping test	Blood grouping test	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.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)	1. Immunology/ kuby8th ed. 2. <i>Essentials of clinical immunology</i> / Helen Chapel....7th ed. 3. Practical Immunology / Hudson& Hay 4th ed.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

١. اسم المقرر:					
علم المناعة ١					
٢. رمز المقرر:					
٣. الفصل/ السنة					
اول\ المرحلة الثالثة					
٤. تاريخ إعداد هذا الوصف					
٢٠٢٥\١\٢٠					
٥. اشكال الحضور المتاحة					
حضورى\اونلاين					
٦. عدد الساعات الدراسية (الكلية)/ عدد الوحدات (الكلية)					
٥\60					
٧. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)					
الاسم : الدكتور محمد هادي مرتضى الايميل: mortada56@gmail.com					
٨. اهداف المقرر					
التعرف على جهاز المناعة كيف يتم التنسيق والتعاون بين الخلايا المناعية استخلاص عمل كل خلية مناعية فهم العمل المضاد للجسيم معرفة وتصنيف المستضاد			اهداف المادة الدراسية		
٩. استراتيجيات التعليم والتعلم					
عرض المحتوى العلمي على الالة العارضة استعمال البورة كوسيلة للشرح على الالة العارضة استعمال الصور والفيديوهات اللازمة على الالة العارضة			الاستراتيجية		
١٠. بنية المقرر					
الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
تفاصيل المفردات النظرية للمادة					
1	٢	القدرة على فهم جهاز	Introduction of the immune system,	تفاعلي-مرئي	كويز شفهي

		innate and adaptive immunity	المناعة		
كويز شفهي	تفاعلي-مرئي	Cells and organs of the immune system, Haematopoiesis, phagocytosis, lymphoid tissues	معرفة اعضاء جهاز المناعة والخلايا بالتفصيل وفهم كيفية تكوين الخلايا المناعية وفهم البلعمة	٢	2
كويز شفهي	تفاعلي-مرئي	Cells and organs of the immune system, Haematopoiesis, phagocytosis, lymphoid tissues	معرفة اعضاء جهاز المناعة والخلايا بالتفصيل وفهم كيفية تكوين الخلايا المناعية وفهم البلعمة	٢	3
كويز شفهي	تفاعلي-مرئي	Antigen, definition, properties, B-cell and T-cell epitopes, superantigen, haptens, and adjuvants.	فهم المستضاد وتعريفه واجزائه وتصنيفه	٢	4
كويز شفهي	تفاعلي-مرئي	Antigen, definition, properties, B-cell and T-cell epitopes, superantigen, haptens, and adjuvants.	فهم المستضاد وتعريفه واجزائه وتصنيفه	٢	5
كويز شفهي	تفاعلي-مرئي	Antibody: definition, structures, classes, properties, and monoclonal Ab formation.	التعمق في عمل المضاد وانواعه وخصائصه والاجسام المضادة وحيدة النسيلة	٢	6
كويز شفهي	تفاعلي-مرئي	Generation of antibody diversity.	علم طرائق خلق الاجسام المضادة (تصنيعها مخبرياً)	٢	7
كويز شفهي	تفاعلي-مرئي	Generation of antibody diversity.	علم طرائق خلق الاجسام المضادة (تصنيعها مخبرياً)	٢	8

9	٢	اكتشاف وفهم مستقبلات الخلية T وأنواعها وتصنيفها وتحديد CDR	T- cell receptors: structure, organization, rearrangement, complementarity determining regions (CDR)	تفاعلي-مرئي	كوبز شفهي
10	٢	اكتشاف وفهم مستقبلات الخلية T وأنواعها وتصنيفها وتحديد CDR	T- cell receptors: structure, organization, rearrangement, complementarity determining regions (CDR)	تفاعلي-مرئي	كوبز شفهي
11	٢	تذكير وتنشيط TCR وتفعيل الذاكرة	T-Cell Activation, Helper Subset Differentiation, and Memory.	تفاعلي-مرئي	كوبز شفهي
12	٢	تذكير عملية النضوج لل BCR وتكوين الذاكرة	B-Cell Activation, Differentiation, and Memory Generation.	تفاعلي-مرئي	كوبز شفهي
13	٢	تقييم الاستجابة المناعية وانواعها وتفعيلها ومعرفة الاستجابة بواسطة خلق المضاد او تفعيل الخلية المناعية المضادة للجسيم	Immune response: types, activation, humoral and cell- mediated immune response	تفاعلي-مرئي	كوبز شفهي
14	٢	تقييم الاستجابة المناعية وانواعها وتفعيلها ومعرفة الاستجابة بواسطة خلق المضاد او تفعيل الخلية المناعية المضادة للجسيم	Immune response: types, activation, humoral and cell- mediated immune response	تفاعلي-مرئي	كوبز شفهي
15	٢	ادراك وفهم مناعة البكتيرية ومحاربة العدوى الناجمة عنها	Bacterial Immunity, anti- virulence	تفاعلي-مرئي	كوبز شفهي

		mechanism, Evade Host Defense Mechanisms, and Viral Immunity, Defense Mechanisms.			
تفاصيل المفردات العملية للمادة					
1	٣	كيفية جمع الامصال	Collection of the blood specimen, preparation of R.B.Cs suspension.	تفاعلي-مرئي	كوبز شفهي- كتابي-تطبيق عملي
2	٣	طرائق جمع عينات الم وتحديد زمر الدم	Collection of the blood specimen, preparation of R.B.Cs suspension.	تفاعلي-مرئي	كوبز شفهي- كتابي-تطبيق عملي
3	٣	تحديد التراكيز والتخفيف وتحديد فعالية الاجسام المضادة	Normality, Dilution, and Titration methods.	تفاعلي-مرئي	كوبز شفهي- كتابي-تطبيق عملي
4	٣	كيف يحضر المستضاد والمستضاد البكتيري RBCs	Antigen preparation, bacterial Ag, R.B.Cs Ag, protein Ag.	تفاعلي-مرئي	كوبز شفهي- كتابي-تطبيق عملي
5	٣	كيف يحضر المستضاد والمستضاد البكتيري RBCs	Antigen preparation, bacterial Ag, R.B.Cs Ag, protein Ag.	تفاعلي-مرئي	كوبز شفهي- كتابي
6	٣	تعلم تلقيح الحيوانات(فئران ، ارانب، جردان) لتحفيز المناعة وانتاج المضادات	Immunization of laboratory, animal heart puncture.	تفاعلي-مرئي	كوبز شفهي- كتابي
7	٣	الاستفادة من دراسة المضادات الطبيعية الموجودة في الامصال	Natural antibodies study.	تفاعلي-مرئي	كوبز شفهي- كتابي-تطبيق عملي
8	٣	استنتاج عمل المكمل ضد البكتيريا	Effect of complement against bacteria.	تفاعلي-مرئي بشكل مباشر على تقانة	كوبز شفهي- كتابي-تطبيق عملي

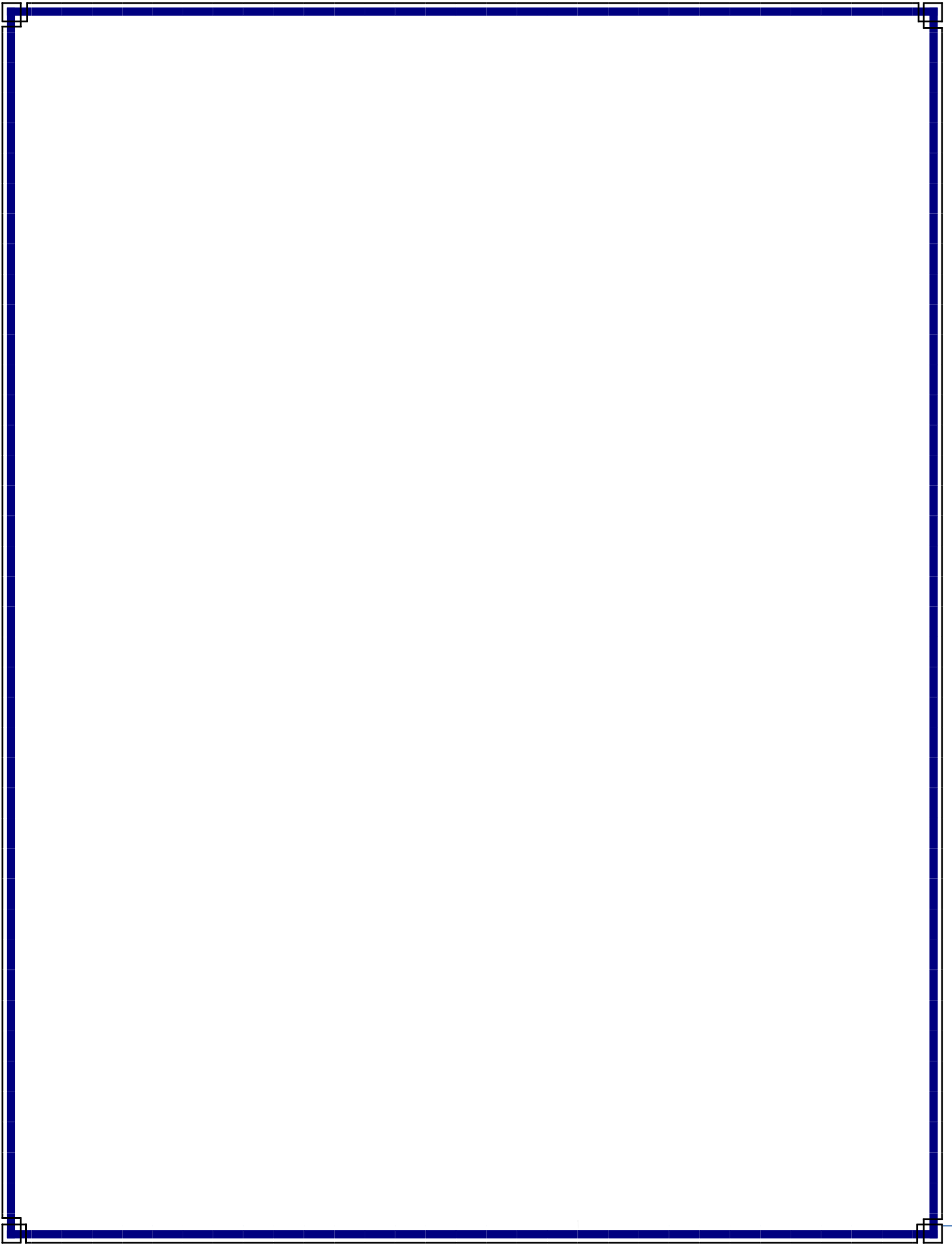
	المطيافية الضوئية - UV Vis				
9	٣	تعلم تأثير المكمل ضد البكتيريا	Effect of complement against bacteria.	تفاعلي-مرئي	كوبز شفهي - كتابي
10	٣	تفاعل الاجسام المضادة ضم المستضادة	Ag – Ab reaction: Agglutination test.	تفاعلي-مرئي	كوبز شفهي - كتابي
١١	٣	تطبيق, Widal test, Rose – Bengal test	Anti – Bacterial immunity: Widal test, Rose – Bengal test.	تفاعلي-مرئي	كوبز شفهي - كتابي
١٢	٣	تطبيق, Widal test, Rose – Bengal test	Anti – Bacterial immunity: Widal test, Rose – Bengal test.	تفاعلي-مرئي	كوبز شفهي - كتابي
١٣	٣	تحليل, Widal test, VDRL test.	Weil-Felix test, VDRL test.	تفاعلي-مرئي	كوبز شفهي - كتابي
١٤	٣	تحليل, Widal test, VDRL test.	Weil-Felix test, VDRL test.	تفاعلي-مرئي	كوبز شفهي - كتابي
١٥	٣	Blood grouping test	Blood grouping test	تفاعلي-مرئي	كوبز شفهي - كتابي

١١. تقييم المقرر

توزع الدرجة من ١٠٠ على وفق المهام المكلف بها الطالب مثل التحضير اليومي والامتحانات اليومية والشفوية والشهرية والتحريرية والتقارير ... الخ

١٢. مصادر التعلم والتدريس

	الكتب المقررة المطلوبة (المنهجية أن وجدت)
1. Immunology/ kuby8th ed. 2. Essentials of clinical immunology / Helen Chapel....7th ed. 3. Practical Immunology / Hudson& Hay 4th ed.	المراجع الرئيسة (المصادر)
	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية ، التقارير ...)
	المراجع الالكترونية، مواقع الانترنت



1. Course Name : Cytogenetic 1					
2. Course Code: None					
3. Semester / Year: Semester					
4. Description Preparation Date: 10. 1. 2025					
5. Available Attendance Forms: Theoretical and practical lectures					
6. Number of Credit Hours (Total) / Number of Units (Total): 60 hours/ Course and 4 hour / week (Theoretical + Practical)					
7. Course administrator's name (mention all, if more than one name)					
Name: Safaa Hussein Abdullah			Email: Safaahussein1988@gmail.com		
8. Course Objectives					
Course Objectives : The student able to : • Define the cytogenetic 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 difference between the Euchromatin and Heterochromatin. • Numerical and structural abnormalities I chromosome. • Known the genetic relationship between chromosome and genetic diseases. • Building family pedigree. • Known the laboratory testes especially to genetic materials.					
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 know signs of genetic disorders, and how they happen.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of Theoretical part					
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 - Quiz
3	2 hours theoretical	Analyze lec.	Cell cycle and checkpoint	Theoretical lec.	- Attend - Quiz
4	2 hours	Develop lec.	DNA as human genetic	Theoretical lec.	- Attend

	theoretical		material, and DNA structure		- 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 - 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

Syllabus of The Practical Course

1	2 hours practical	Understand lec.	Instruments and materials used in medical genetics field	- Practical Lec.	- Attend - Quiz
2	2 hours practical	Remember lec.	Laboratory safety	- Practical Lec.	- Attend - Quiz
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
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 - Quiz
15	2 hours practical	Read results	Read results of DNA extraction by electrophoresis	- Practical Lec. - Videos	- Attend - Discussion - Read the results

11.Course Evaluation

The following evaluation methods are adopted:

- Theoretical and practical quiz.
- Attendance and discussion.

Distribution of grades:

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

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	None
Main references (sources)	None
Recommended books and references (scientific journals, reports...)	Jorde,L.B.;Carey,J.C&Bamshad,M.J.(2019).Medical genetics. Sixth Edition, june 1.
Electronic References, Websites	None

Academic description of Medical Laboratories department for Cytogenetic - Third Stage
Dr. Safaa Hussein Abdullah

1. Course Name:	
Computer Applications 1	
2. Course Code:	
3. Semester / Year:	
Chapter One Stage Three Medical Laboratory Techniques	
4. Description Preparation Date:	
2025/1/10	
5. Available Attendance Forms:	
My presence - my description	
6. Number of Credit Hours (Total) / Number of Units (Total):	
30 theoretical hours and 30 practical hours, equivalent to 60 study hours, first semes - 2 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

1. Course Name:	
Hematology 1	
2. Course Code:	
3. Semester / Year:	
First semester– Third year	
4. Description Preparation Date:	
6-1-2025	
5. Available Attendance Forms:	
Attendance Education in classroom	
6. Number of Credit Hours (Total) / Number of Units (Total):	
60 teaching hours : 30 hours theory + 30 practical hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Associated Professor Email: bassel.adel@alayen.edu.iq	
8. Course Objectives	
Course Objectives	Definition of the student on the human blood: ingredients, its properties and changes that occur when infected with different diseases • Define the student on how to handle blood samples and tests to measure them and diagnose their meaning. • Assisting the student in linking information gained to the labour market to keep abreast of the scientific and technological development related to the examinations
9. Teaching and Learning Strategies	
Strategy	The learning and education strategy is based on the modern interactive method in university education as the student is a member participating in scientific information acquisition, analysis and publication. The theoretical lectures are based on the direct classroom interaction between teaching and students through the presentation of the lesson and direct discussion between teaching and students on the one hand and between students themselves on the other by offering them mini-research on the scientific vocabulary. Practical lectures are based on the theoretical and practical explanation of experiences in front of the student to return the

	himself on real human blood samples to develop his skills, li theoretical information to the process, record the variable and as if were examining in a medical selection, and then analyze the resu based on universally and scientifically approved natu measurements.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	Definition course and lo at keywords a introduction blood science	Introduction hematology	Theoretical lecture	Exam in the last minutes of t lecture
2	2	Clarification the blo originated fro the bone marro to deepen t student's knowledge of t blood tissue	Hematopoiesis (blood formation)	Theoretical lecture a theoretical research dividing students in groups	Exam in the last minutes of t lecture
3	2	Discussion r cells originat and their cycle	Erythropoiesis (E blood formation)	Theoretical lecture a theoretical research dividing students in groups	Exam in the last minutes of t lecture
4	2	Introducing students hemoglobin a its role	Hemoglobin (structure, synthesi and levels in bloo	Theoretical lecture Giving Ho Research	Exam in the last minutes of t lecture
5	2	Discussion a analysis w students abo anemia and types in gene and approach	Anemia	Theoretical lecture	General questio by dividi students in groups and o evaluations

		health condition			
6	2	Introducing Students About Small Anaemic cells	Microcytosis & iron deficiency anemia	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of the lecture
7	2	Introducing Students About Anaemia Large cells	Macrocytosis megaloblastic anemia	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of the lecture
8	2	Definition and discussion with students malignant anaemia resulting from vitamin B12 deficiency	Pernicious anemia	Theoretical lecture	Exam in the last minutes of the lecture
9	2	Introducing students decomposition anemia resulting from breakdown and degradation of red cells	Hemolytic anemias	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of the lecture
10	2	Definition and discussion with the students broken for diphtheria, bacterial anaemia caused by the deficiency of hydrogen extracting hexphosphate glucose	G6PD deficiency anemia	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of the lecture
11	2	Students'	Hereditary	Theoretical	Exam in the last

		knowledge of the genetic proliferation of spherical cells	spherocytosis	lecture theoretical research dividing students in groups	a minutes of lecture
12	2	Definition and discussion with the students of thalassemia as an inherited blood disorder characterized by low hemoglobin production.	Thalassemia	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of lecture
13	2	Introducing students to sickle cell disease sickle cell disease is a group of inherited blood disorders	Sickle cell anemia	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of lecture
14	2	Introduce students to the concept of anemia, explaining anemia as a condition where the body is not getting enough oxygen due to a lack of red blood cells or bone marrow failure to produce enough cells to regenerate the parent's cells	Aplastic anemia	Theoretical lecture theoretical research dividing students in groups	Exam in the last minutes of lecture
15	2	Introducing students to the concept of polycythemia, explaining it as a condition where the body has an increased number of red blood cells	Polycythemia	Theoretical lecture	Exam in the last minutes of lecture
Syllabus of The Practical Course					
1	2	Define and describe the process of blood collection and how to withdraw and save samples	Blood collection	Practical lecture through a laboratory experience	Evaluate the methodology of laboratory work and adherence to laboratory control and reading

					results with written report the experiment a compare results with t correct measurement the sample.
2	2	Definition a training students to d with anti-clotti types	Anticoagulant	Practical lectu through a l laboratory experience	Evaluate the mod operandi a adherence laboratory contr and readal results with written report the experiment a compare t results with t correct measurement the sample.
3	2	Definition a training students measure blo elements a differences age	Normal value all blo components according to ag	Practical lectu through a l laboratory experience	Evaluate the mod operandi a adherence laboratory contr and readal results with written report the experiment a compare t results with t correct measurement the sample.
4	2	Definition a training students on h to measu hemoglobin various measurement methods	Hb estimation different metho	Practical lectu through a l laboratory experience	Evaluate the mod operandi a adherence laboratory contr and readal results with written report the experiment a compare t

					results with t correct measurement the sample.
5	2	Teaching a training student the meaning hematocrit or t volume accumulated cells of blo volume	Packed volume PCV	Practical lectu through a li laboratory experience	Evaluate the mod operandi a adherence laboratory contr and readal results with written report the experiment a compare t results with t correct measurement the sample.
6	2	Teaching a training student manually a mechanically count red ce and introdu them to hea measurements according to s and age	RBCs cou (manual) a automated RB count	Practical lectu through a li laboratory experience	Evaluate the mod operandi a adherence laboratory contr and readal results with written report the experiment a compare t results with t correct measurement the sample.
7	2	Teaching a training student to measure t characteristics inner red pelli of cell size a the amount hemoglobin	Red cell indic MCV , MCH MCHC	Practical lectu through a li laboratory experience	Evaluate the mod operandi a adherence laboratory contr and readal results with written report the experiment a compare t results with t correct measurement the sample.

8	2	Teach and train students how to wipe blood glass, water platelets and cells microscopically and color white cells	Blood preparation	Practical lecture through a laboratory experience	Evaluate the model operandi adherence laboratory control and read results with written report the experiment and compare results with correct measurement the sample.
9	2	Teaching a training student to study health blood cell form and dysfunction in their form and diseases resulting from their changes forms	Study of red cell morphology health disease	Practical lecture through a laboratory experience	Evaluate the model operandi adherence laboratory control and read results with written report the experiment and compare results with correct measurement the sample.
10	2	This experiment enables training a guidance students to study and detect dysfunction internal particles in red cells containing DNA	Inclusion bodies in red blood cells	Practical lecture through a laboratory experience	Evaluate the model operandi adherence laboratory control and read results with written report the experiment and compare results with correct measurement the sample.
11	2	Guide student and train them to analyze samosa fragility	Osmotic fragility test reticulocyte count	Practical lecture through a laboratory experience	Evaluate the model operandi adherence laboratory control

		to determine whether erythrocytes are prone to fracture and crash.			and readal results with written report the experiment a compare t results with t correct measurement the sample.
12	2	It is a test for the detection of sickle cells in the blood sample and is used in the diagnosis of sickle cell anemia, in which sickle shaped red blood cells appear	Sickle cell test	Practical lecture through a laboratory experience	Evaluate the model of operandi adherence laboratory control and readal results with written report the experiment a compare t results with t correct measurement the sample.
13	2	The electrical separation of hemoglobin, the electrical migration of hemoglobin the haemoglobin relay is a blood test through which hemoglobin diseases can be differentiated.	Hb electrophoresis	Practical lecture through a laboratory experience	Evaluate the model of operandi adherence laboratory control and readal results with written report the experiment a compare t results with t correct measurement the sample.
14	2	Train students to examine the rate of deposition of red blood cells within one hour	Erythrocyte sedimentation rate	Practical lecture through a laboratory experience	Evaluate the model of operandi adherence laboratory control and readal results with written report the experiment a

					compare results with correct measurement the sample.
15	2		Global revision		
11. Course Evaluation					
The student grades are distributed from 100 points to the full course and the student examines two university examinations. The midterm exam is for 40 points and divided according to the following: 5 points of class participation and attendance 15 points Written Practical Examination 20 points Linear Theoretical Fruits The Final is for for 60 points and divided according to the following: 25 points for practical exam 35 points for theoretical exam					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			References 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 , 5 edition , McGraw Hill Lange medical books (2011). 3. Dacie and Lewis Practical hematology. S.Mitchell. Lewis and Barbara J. Bain, 10th edition , Church Livingstone Elsevier (2006).		
Recommended books and references (scientific journals, reports...)			Global Publishing Houses springer Elsevier pubmed		
Electronic References, Websites			www.who.int WHO website		

