Third Grade

Third Year Curriculum: Building the Foundations of Medical Knowledge
College of Medicine – University of Al-Ameed

Third year curriculum map (30 weeks)				
code	**Subject**	**Theory**	**Practice**	**Units**
(MICR 301)	**Microbiology**	**120**	**60**	**10**
(PHAR 302)	**Pharmacology**	**90**	**60**	**8**
(PATH 303)	**Pathology**	**60**	**45**	**5.5**
(PARS 304)	**Parasitology**	**30**	**60**	**4**
(MEDI 305)	**Internal medicine**	**45**	**60**	**5**
(SURG 306)	**Surgery**	**30**		**2**
(BIPH 307)	**Biostatistics and public health**	**30**		**2**
	Extracurricular Activity	**30**		
		405	**285**	**36.5**

Microbiology

Third grade

Academic program discretion

This academic program description provides a brief overview of the key features of the program and the expected learning outcomes for the student, demonstrating whether the student has made the most of the available opportunities. It is accompanied by a description of each course within the program.

Educational Establishment	University of Al-Ameed
Scientific Department	College of Medicine
Name of the Professional Academic Program.	Modified traditional curriculum
Final Graduation Certificate	M.B.Ch.B
Educational system: **Annual/courses/other**	Annual
Approved accreditation program	Iraqi National Guidelines on Standards for Established and Accrediting Medical Schools
Other external factors	WHO
Date the description was written	2025/4/1

Objectives of the academic program:

1. Understanding Microbial Characteristics: Study the biological properties of various pathogens, including bacteria, viruses, fungi, and parasites, and their mechanisms of impact on the human body.
2. Immunology and Its Relation to Microbiology: Understand the interaction between microbes and the immune system, and how the body defends itself against infections.
3. Infection Diagnosis: Learn the methods of diagnosing infectious diseases through microbiological testing.
4. Treatment and Prevention of Infectious Diseases: Understand the appropriate treatment methods for microbial pathogens, including antibiotics, antiviral therapies, and immunotherapy.
5. Environmental Impact on Microorganisms: Study the effect of environmental factors such as temperature, humidity, and chemicals on the growth and reproduction of microorganisms.
6. Ethical Aspects of Microbiological Research: Apply ethical principles in scientific and medical research, including the handling of biological samples and patient privacy.

Resources:

- Jawetz, Melnik &Adelbergs
- Medical Microbiology,
- 28th Edition, LANCE Medical Publications, 2019.
- Kuby Immunology,
- Jenni Punt, Shron Stanford & Co.
- 8th Edition, 2019
- W. H.Freeman & Company

Microbiology \ Grade 3

Code: MICR 301 Credits 10

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Bacterial cell structure and classification				
MICR 1	Remember the main components of bacterial cells (cell wall, membrane, genetic material) and their functions. Understand the differences between Gram-positive and Gram-negative bacteria and the significance of Gram staining. Apply the classification techniques for bacterial identification based on shape, metabolism, and genetic material. Clinical Benefits: Accurate bacterial identification is crucial for diagnosing infections and determining the best treatment options. Understanding Gram staining and classification helps in rapid diagnosis and effective treatment strategies, especially in emergency situations.	K	Large group lecture	MCQ & Short answer questions
Bacterial nutrition				
MICR 2	Remember the essential nutritional requirements of bacteria, such as carbon, nitrogen, and minerals. Understand how bacteria adapt to various media in laboratory conditions. Evaluate the suitability of different culture media for specific bacterial species in clinical settings. Clinical Benefits: Helps in understanding how to grow and cultivate bacterial pathogens in a laboratory, ensuring accurate diagnostic testing. Knowledge of bacterial nutrition can assist in identifying the optimal growth conditions for clinical testing.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Bacterial growth and growth curve				
MICR 3	Understand the phases of bacterial growth: lag, log, stationary, and death, and the factors that affect them. Analyze the implications of growth patterns in relation to bacterial infection progress. Apply knowledge of bacterial growth kinetics to predict treatment outcomes and antibiotic effectiveness. Clinical Benefits: Understanding bacterial growth helps predict infection progression and adjust treatment accordingly. Provides insight into how bacteria develop resistance over time, which helps in refining therapy.	K	Large group lecture	MCQ & Short answer questions
Bacterial cultivation and types of cultures				
MICR 4	Remember the basic techniques for cultivating bacteria in solid and liquid media. Understand the significance of anaerobic and aerobic conditions for bacterial growth. Apply appropriate culture methods to identify pathogens and assess their antibiotic resistance profiles. Clinical Benefits: Essential for isolation and identification of bacterial pathogens, ensuring accurate diagnosis and the correct treatment approach. Antibiotic sensitivity testing is key in treating infections effectively, particularly in resistant cases.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Bacterial genetics				
MICR 5	Recall the structure and function of bacterial DNA, plasmids, and operons. Understand the processes of horizontal gene transfer in bacteria (transformation, conjugation, and transduction). Analyze the role of bacterial genetics in the development of virulence and antibiotic resistance. Clinical Benefits: Bacterial genetics knowledge helps understand resistance mechanisms, guiding more effective treatment strategies. Identifying genetic factors responsible for virulence aids in developing targeted therapies for infections.	K	Large group lecture	MCQ & Short answer questions
Antibiotics				
MICR 6	Remember the mechanisms of action of common antibiotic classes (e.g., beta-lactams, tetracycline's). Understand the factors that influence antibiotic selection, including the pathogen's resistance patterns. Apply the appropriate antibiotic therapy based on the susceptibility patterns of pathogens in clinical cases. Clinical Benefits: Choosing the right antibiotic based on the infection type and pathogen susceptibility reduces treatment failure. Knowledge of antibiotic mechanisms allows for tailored therapies, improving clinical outcomes and minimizing resistance development.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Antibiotic resistance				
MICR 7	Understand the mechanisms through which bacteria develop resistance to antibiotics (e.g., mutations, efflux pumps). Analyze the impact of antibiotic misuse on the development of resistance in clinical settings. Evaluate the role of antibiotic stewardship programs in preventing resistance. Clinical Benefits: Preventing antibiotic resistance ensures that treatments remain effective over time, particularly for serious infections. Knowledge of resistance mechanisms helps in choosing alternative antibiotics and optimizing treatment regimens to combat resistant infections.	K	Large group lecture	MCQ & Short answer questions
Bacterial pathogenicity				
MICR 8	Remember the key virulence factors of bacteria (e.g., toxins, adhesion molecules). Understand how bacteria invade and evade host immune responses. Analyze the relationship between virulence factors and the severity of bacterial infections. Clinical Benefits: Understanding bacterial pathogenicity helps in developing preventive measures and targeted therapies to combat infections. Knowledge of virulence factors aids in designing vaccines and other therapeutic interventions.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Normal bacterial flora				
MICR 9	Recall the types of bacteria that make up the normal human flora. Understand how disturbances in normal flora can lead to opportunistic infections. Evaluate the role of probiotics and prebiotics in maintaining a healthy microbiome. Clinical Benefits: Understanding normal flora helps in avoiding unnecessary antibiotic use, which can disrupt the microbiome. Knowledge of flora disturbances guides the treatment of infections like Clostridium difficile associated with antibiotics.	K	Large group lecture	MCQ & Short answer questions
Pyogenic cocci (Staphylococci)				
MICR 10	Remember the species of Staphylococcus responsible for common infections (e.g., Staphylococcus aureus). Understand the clinical presentations of Staphylococcus infections. Apply knowledge of Staphylococcus pathogenesis in the diagnosis and management of infections. Clinical Benefits: Timely diagnosis of Staphylococcal infections is crucial for preventing serious conditions like sepsis and endocarditis. Identifying resistance patterns helps guide appropriate treatment, especially in hospital-acquired infections.	K	Large group lecture	
Staphylococcal diseases				
MICR 11	Recall the clinical signs and symptoms of Staphylococcus infections, such as skin abscesses and pneumonia. Understand the role of antibiotic resistance in the treatment of Staphylococcus infections.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Analyze the factors contributing to Staphylococcus infection outbreaks in hospital settings. Clinical Benefits: Understanding the clinical manifestations of Staphylococcal diseases improves the ability to diagnose and treat infections. Helps prevent nosocomial infections by implementing effective infection control measures.			
Streptococci				
MICR 12	Remember the key species of Streptococcus (e.g., Streptococcus pyogenesis). Understand the diseases caused by Streptococcus species, including their pathogenesis. Apply knowledge of Streptococcus infections to select the appropriate diagnostic and therapeutic strategies. Clinical Benefits: Rapid diagnosis of Streptococcal infections helps prevent complications like rheumatic fever and glomerulonephritis. Appropriate antibiotic therapy can prevent the spread of infection and reduce complications.	K	Large group lecture	MCQ & Short answer questions
Streptococcal diseases and post-streptococcal immunological diseases				
MICR 13	Recall the complications associated with Streptococcus infections, such as rheumatic fever and glomerulonephritis. Understand the mechanisms behind post-streptococcal autoimmune diseases. Evaluate strategies for preventing and managing the sequelae of untreated Streptococcus infections. Clinical Benefits: Early treatment can prevent long-term complications of Streptococcus infections like rheumatic heart disease. Knowledge of autoimmune sequelae informs post-infection care and monitoring.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Pneumococci and pneumococcal diseases				
MICR 14	Remember the key characteristics of Streptococcus pneumonia. Understand the clinical features of pneumococcal diseases such as pneumonia and meningitis. Apply preventive measures, including vaccination, in managing pneumococcal infections. Clinical Benefits: Pneumococcal vaccines are essential in preventing infections in high-risk populations, such as children and the elderly. Early diagnosis and treatment of pneumococcal infections can reduce mortality and morbidity, especially in immunocompromised patients	K	Large group lecture	MCQ & Short answer questions
Neisseria gonorrhea and Neisseria meningitides				
MICR 15	Remember the diseases caused by Neisseria species, such as gonorrhea and meningococcal meningitis. Understand the pathogenesis and transmission of Neisseria gonorrhea and Neisseria meningitides. Apply the principles of diagnosis and treatment for Neisseria infections, including prophylaxis. Clinical Benefits: Timely diagnosis of gonorrhea and meningococcal meningitis helps to reduce transmission and improve patient outcomes. Prophylactic treatment and vaccination strategies prevent the spread of these infections, particularly in high-risk populations.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Corynebacterium diphtheria				
MICR 16	Remember the key characteristics of Corynebacterium diphtheria, including its morphology and toxin production. Understand the pathogenesis of diphtheria, including the role of diphtheria toxin in tissue damage. Apply knowledge of Corynebacterium diphtheria for diagnostic techniques and appropriate treatment strategies. Clinical Benefits: Early identification of diphtheria is critical for preventing severe complications like myocarditis and nerve damage. Vaccination against diphtheria provides effective prevention, especially in children and immunocompromised individuals	K	Large group lecture	MCQ & Short answer questions
Listeria				
MICR 17	Recall the pathogenic characteristics of Listeria monocytogenes, including its intracellular survival and ability to cross barriers like the placenta and blood-brain barrier. Understand the clinical manifestations of listeriosis, particularly in vulnerable populations (e.g., pregnant women, neonates, immunocompromised). Evaluate treatment options for listeriosis, including the role of antibiotics in managing infection. Clinical Benefits: Early diagnosis of listeriosis allows for prompt antibiotic treatment, reducing the risk of complications such as neonatal sepsis and meningitis. Awareness of Listeria risk is essential for preventing infection, especially in pregnant women and immunocompromised individuals.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Bacillus group - Anthrax				
MICR 18	Remember the characteristics of Bacillus anthracis and its ability to form spores. Understand the pathogenic mechanisms of anthrax, including toxin production and spore germination. Apply knowledge of anthrax diagnosis and treatment, including the role of antibiotics and vaccines in prevention. Clinical Benefits: Recognizing anthrax symptoms early allows for early treatment and reduces mortality, especially in cases of inhalation anthrax. Vaccination and appropriate antibiotic treatment are key for preventing outbreaks, particularly in high-risk occupational settings.	K	Large group lecture	MCQ & Short answer questions
Clostridia				
MICR 19	Remember the main species of Clostridium, such as Clostridium tetani, Clostridium botulinum, and Clostridium perfringens. Understand the diseases caused by Clostridium species, including tetanus, botulism, and gas gangrene. Analyze the clinical presentation and management of Clostridia infections, focusing on toxin production and treatment options. Clinical Benefits: Timely administration of antitoxins and antibiotics can save lives in cases of tetanus and botulism. Awareness of gas gangrene and its rapid progression is essential for early surgical intervention and antibiotic therapy to prevent tissue necrosis.	K	Large group lecture	MCQ & Short answer questions
Clostridial diseases				
MICR 20	Understand the clinical manifestations of Clostridial diseases such as botulism, tetanus, and gas gangrene. Evaluate the role of toxin production in the pathogenesis of these diseases.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Apply knowledge of preventive measures, including vaccination and proper wound care, to reduce the risk of Clostridial infections. Clinical Benefits: Vaccination for tetanus and botulism prevents life-threatening complications, particularly in high-risk groups. Early recognition of gas gangrene and the use of broad-spectrum antibiotics can prevent sepsis and death.			
Mycobacteria				
MICR 21	Recall the characteristics of Mycobacterium tuberculosis, Mycobacterium leprae, and other non-tuberculous mycobacteria. Understand the pathogenesis of tuberculosis and leprosy, including the immune response and chronicity of the diseases. Evaluate treatment strategies for mycobacterial infections, including the importance of long-term antibiotic therapy. Clinical Benefits: Timely diagnosis and appropriate treatment of tuberculosis can prevent transmission and drug resistance. Leprosy management requires early detection to avoid nerve damage and disability, with multidrug therapy providing a successful treatment option.	K	Large group lecture	MCQ & Short answer questions
Mycobacterium tuberculosis				
MICR 22	Recall the pathophysiology of Mycobacterium tuberculosis and its ability to form granulomas in the lungs. Understand the clinical signs and diagnostic methods for tuberculosis, including chest X-ray and sputum culture. Apply the principles of multi-drug therapy (DOTS) in the treatment of tuberculosis. Clinical Benefits:	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Early diagnosis and proper treatment of tuberculosis prevent its spread in the community and reduce complications. Directly observed treatment (DOT) ensures adherence to therapy, reducing the emergence of drug-resistant tuberculosis.			
Mycobacterium leprae				
MICR 23	Remember the characteristics of Mycobacterium leprae and its impact on peripheral nerves and skin. Understand the pathogenesis of leprosy and the role of the immune system in disease progression. Analyze the treatment options for leprosy, including the use of multidrug therapy (MDT). Clinical Benefits: Early detection of leprosy allows for appropriate treatment to prevent nerve damage and disfigurement. Multidrug therapy (MDT) is highly effective in curing leprosy and preventing its spread.	K	Large group lecture	MCQ & Short answer questions
Mycobacterium avium and other forms of mycobacteria				
MICR 24	Recall the types of non-tuberculous mycobacteria (NTM) such as Mycobacterium avium and their environmental reservoirs. Understand the risk factors for infection with NTM, particularly in immunocompromised patients. Evaluate the treatment strategies for infections caused by non-tuberculous mycobacteria. Clinical Benefits: Early identification of NTM infections allows for tailored antimicrobial therapy, improving outcomes, especially in HIV/AIDS patients. Awareness of environmental exposure and immunocompromised status helps prevent infections in susceptible individuals.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Introduction to immunology				
MICR 25	Remember the key components and functions of the immune system, including primary and secondary lymphoid organs. Understand the basic principles of innate and adaptive immunity and how they work together to protect the body from infections. Apply the concepts of immunology to real-life clinical situations, such as vaccination and infection control. Clinical Benefits: Understanding the immune system is essential for diagnosing and treating immune-related disorders and infectious diseases. Knowledge of the immune system is foundational for vaccine development and improving immunization strategies. Helps in understanding the immune response to infections, which guides treatment protocols in infectious diseases.	K	Large group lecture	MCQ & Short answer questions
Innate and Adaptive Immunity				
MICR 26	Recall the main differences between innate and adaptive immunity, including their components (e.g., phagocytes vs. lymphocytes). Understand how both systems cooperate to provide defense against pathogens. Analyze the role of antigen-presenting cells (APCs) in linking innate and adaptive immunity. Clinical Benefits: Knowledge of innate and adaptive immunity helps in diagnosing autoimmune diseases, inflammatory conditions, and allergic reactions. Understanding how immune responses work is critical in designing immunotherapies for cancer and chronic infections. Provides insights into the importance of the immune response in vaccination and its role in immunological memory.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Cells of Immune System (B & T Cells)				
MICR 27	Understand the roles of B cells and T cells in the immune response, including the formation of antibodies and cytotoxic activity. Analyze the processes of clonal selection and clonal expansion in both B and T lymphocytes. Evaluate the importance of immune tolerance and its relationship to the function of B and T cells. Clinical Benefits: Key for diagnosing B and T cell deficiencies which can lead to immunodeficiencies such as SCID (Severe Combined Immunodeficiency). Understanding B and T cell functions helps in the treatment of autoimmune diseases (e.g., Rheumatoid Arthritis, Multiple Sclerosis) and immunotherapies. Cancer immunotherapies like CAR T-cell therapy depend on manipulating these cells for effective treatment of hematological malignancies.	K	Large group lecture	MCQ & Short answer questions
Cell Cooperation in Immune Response				
MICR 28	Understand how immune cells, such as macrophages, dendritic cells, T-helper cells, and cytotoxic T cells, cooperate during an immune response. Analyze the process of antigen presentation and the activation of T cells in both cellular and humoral immune responses. Evaluate the impact of defective cell cooperation on the development of autoimmune diseases and chronic infections. Clinical Benefits: Knowledge of cell cooperation is essential for understanding the pathophysiology of diseases such as HIV/AIDS, where T cell cooperation is impaired. Understanding cell interaction helps in immunotherapy development, such as	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	enhancing T-cell responses against cancers. Key for managing immune suppression in patients after organ transplants,			
Hypersensitivity				
MICR 29	Recall the four types of hypersensitivity reactions (Type I, II, III, IV) and their underlying mechanisms. Understand the clinical manifestations of hypersensitivity reactions, such as anaphylaxis, autoimmune hemolytic anemia, and contact dermatitis. Apply knowledge of hypersensitivity to manage and treat allergic reactions and immune-mediated diseases. Clinical Benefits: Hypersensitivity management is essential for treating allergic reactions like anaphylaxis and rashes caused by contact allergens. Helps in diagnosing and managing autoimmune diseases and understanding the role of immune responses in conditions like rheumatoid arthritis and lupus. Immunotherapy and desensitization techniques can be applied to treat allergies by understanding the mechanisms behind Type I hypersensitivity	K	Large group lecture	MCQ & Short answer questions
Autoimmunity				
MICR 30	Understand the mechanisms that lead to the development of autoimmunity, including loss of immune tolerance. Analyze the role of genetic predisposition and environmental factors in triggering autoimmune diseases. Apply knowledge of autoimmunity to diagnose and manage common autoimmune diseases such as systemic lupus erythematosus and rheumatoid arthritis. Clinical Benefits: Knowledge of autoimmunity is crucial for the early diagnosis and management of	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	diseases like lupus, multiple sclerosis, and Graves' disease. Aids in personalized medicine, helping to tailor treatments for patients based on their specific autoimmune profile. Improves understanding of immune-modulating therapies and the development of biological treatments for autoimmune diseases.			
Autoimmune Diseases				
MICR 31	Recall common autoimmune diseases and their associated clinical features (e.g., Hashimoto's thyroiditis, Rheumatoid arthritis, Type 1 diabetes). Understand how immune dysregulation leads to the destruction of self-tissues in autoimmune diseases. Evaluate treatment strategies, including immunosuppressive drugs, biologics, and plasmapheresis for autoimmune diseases. Clinical Benefits: Early recognition and treatment of autoimmune diseases can help in preventing long-term organ damage and improving patient outcomes. Helps in immunosuppressive therapy, which is crucial for preventing autoimmune flare-ups and managing organ transplant rejection. Provides a foundation for understanding biologic therapies that target specific immune pathways in diseases like rheumatoid arthritis and psoriasis	K	Large group lecture	MCQ & Short answer questions
Immune Deficiency Diseases				
MICR 32	Understand the distinction between primary and secondary immunodeficiencies and their causes. Analyze the clinical manifestations of immune deficiencies, including recurrent infections and poor vaccine responses. Evaluate diagnostic methods and therapeutic strategies for immune deficiencies, such as gene therapy and immunoglobulin replacement therapy.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Clinical Benefits: Early diagnosis of immune deficiencies allows for timely treatment, including antibiotics, immunoglobulin therapy, and bone marrow transplants. Knowledge of immunodeficiencies helps prevent and treat opportunistic infections, especially in HIV/AIDS and primary immunodeficiencies. Advances in gene therapy offer hope for curative treatments for conditions like SCID (Severe Combined Immunodeficiency) and other genetic immune defects.			
Immunoglobulins				
MICR 33	Learning Objectives: Understand the structure and function of different types of immunoglobulins (IgA, IgD, IgE, IgG, IgM). Analyze how immunoglobulins play a role in immune responses such as neutralization of pathogens, opsonization, and complement activation. Apply knowledge of immunoglobulin deficiencies to diagnose and manage conditions like X-linked agammaglobulinemia. Clinical Benefits: Understanding immunoglobulins helps in diagnosing and managing antibody deficiencies like IgA deficiency and Selective IgM deficiency. Key for the use of immunoglobulin therapy in treating immunodeficiencies, including primary immunodeficiencies and autoimmune diseases. Helps in understanding vaccination responses, as certain immunoglobulins are crucial for long-term immunity.	K	Large group lecture	MCQ & Short answer questions
Complement System				
MICR 34	Recall the components of the complement system and how they contribute to immune defense.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Understand the role of the complement system in inflammation, phagocytosis, and immune complex clearance. Analyze the clinical implications of complement system deficiencies in diseases like SLE and paroxysmal nocturnal hemoglobinuria. Clinical Benefits: Knowledge of the complement system is vital for diagnosing and managing immune complex diseases like lupus. Provides insights into complement deficiencies, which can increase susceptibility to infections. Essential for understanding the mechanisms behind complement-mediated tissue damage in diseases like autoimmune vasculitis.			
Immune Tolerance				
MICR 35	Understand the mechanisms of immune tolerance, including central and peripheral tolerance. Analyze the relationship between immune tolerance and the development of autoimmunity. Evaluate the role of immune tolerance in organ transplantation and cancer immunotherapy. Clinical Benefits: Organ Transplantation: Knowledge of immune tolerance is essential in preventing organ rejection following transplants. Understanding how tolerance mechanisms are manipulated helps in immunosuppressive therapy to prevent immune-mediated rejection of the transplanted organ. Autoimmunity Prevention: Insights into immune tolerance mechanisms help in understanding how autoimmune diseases develop and how tolerance breakdown leads to disorders such as lupus or rheumatoid arthritis. This is critical for developing strategies to prevent or treat these conditions.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Cancer Immunotherapy: Understanding immune tolerance is key for improving cancer immunotherapy, as tumor cells can evade immune responses by exploiting tolerance mechanisms.			
Introduction to virology				
MICR 36	Understand the basic principles of virology, including viral structures, replication mechanisms, and classification. Analyze the differences between DNA and RNA viruses, and their clinical implications. Evaluate the impact of virus classification on diagnosis and treatment strategies. Clinical Benefits: Accurate viral classification helps in selecting diagnostic techniques and antiviral therapies. Understanding viral replication is critical in developing antiviral treatments	K	Large group lecture	MCQ & Short answer questions
Viral classification and structure				
MICR 37	Remember how viruses are classified based on their genetic material (DNA/RNA), shape, and replication strategy. Understand the role of viral structure in host cell invasion. Analyze how viral classification impacts treatment options and prevention strategies. Clinical Benefits: Viral classification aids in choosing the correct diagnostic test and tailoring treatment strategies. Helps identify emerging viral threats and determine appropriate vaccines.	K	Large group lecture	MCQ & Short answer questions
Replication of viruses				
MICR 38	Study the process of viral replication within the host cell. Understand the significance of viral attachment, entry, replication, and release.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Apply knowledge of viral replication to the development of antiviral therapies. Clinical Benefits: Understanding viral replication is essential for developing antiviral drugs that target specific steps in the replication process. Knowledge of how viruses spread helps in controlling outbreaks and preventing infections.			
Cultivation of viruses				
MICR 38	Understand the methods used to cultivate viruses in laboratory settings. Analyze the importance of cultivating viruses for diagnostic and research purposes. Evaluate how viral cultivation can impact the development of vaccines and therapies. Clinical Benefits: Virus cultivation is critical for diagnosis and development of vaccines and antiviral drugs. Helps isolate novel viruses, which is important for emerging viral infections and pandemic preparedness.	K	Large group lecture	MCQ & Short answer questions
Orthomyxoviruses (Influenza)				
MICR 39	Recall the characteristics of influenza viruses and their subtypes. Understand the pathogenesis and transmission dynamics of influenza. Evaluate the clinical implications of flu vaccines and antiviral treatments. Clinical Benefits: Influenza vaccines are key in preventing outbreaks and protecting vulnerable populations, such as the elderly and immunocompromised individuals. Antiviral treatments help reduce the severity and duration of symptoms, particularly in high-risk groups.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Herpes viruses				
MICR 40	Identify the different types of herpesviruses and the diseases they cause. Analyze the replication cycle of herpesviruses, including latency and reactivation. Evaluate the clinical manifestations of herpesvirus infections and the available antiviral treatments. Clinical Benefits: Diagnosis and Treatment: Understanding herpesvirus infections is essential for diagnosing conditions like oral herpes, genital herpes, and shingles. Early diagnosis allows for effective antiviral treatment, reducing morbidity. Neonatal Infections: Herpes simplex virus can cause neonatal infections, potentially leading to life-threatening conditions such as encephalitis. Early diagnosis and treatment are critical to preventing severe complications. Prevention and Vaccination: Knowledge of the varicella-zoster virus and its vaccine is key for preventing chickenpox and shingles, especially in at-risk populations like the elderly and immunocompromised patients.	K	Large group lecture	MCQ & Short answer questions
Rhabdoviruses - Rabies				
MICR 41	Describe the structure and replication cycle of the rabies virus. Understand the transmission mechanisms of rabies and the clinical symptoms in humans. Evaluate the available prophylactic and therapeutic interventions for rabies. Clinical Benefits: Early Intervention: Knowledge of rabies transmission and symptoms helps healthcare professionals initiate post-exposure prophylaxis (PEP) promptly, preventing the progression of the disease. Public Health Awareness: Understanding rabies transmission in animals helps reduce the risk of human exposure,	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	especially in endemic regions. Educating patients and communities about preventive measures can save lives.			
Arboviruses, Coronavirus				
MICR 42	Identify the different types of arboviruses and coronaviruses, including Zika virus, Dengue, and SARS-CoV-2. Understand the transmission routes, pathogenesis, and clinical presentations of diseases caused by arboviruses and coronaviruses. Evaluate the role of public health interventions, vaccines, and antiviral treatments in controlling outbreaks of these viruses. Clinical Benefits: Outbreak Management: Knowledge of arboviruses and coronaviruses is crucial for managing emergency outbreaks, such as the COVID-19 pandemic and Zika virus outbreaks, guiding effective public health responses. Vaccine Administration: Understanding the mechanisms of vaccine development for coronaviruses (e.g., COVID-19 vaccines) and arboviruses helps students in advising patients about immunization schedules and post-vaccine care. Symptom Recognition: Healthcare providers can recognize symptoms of infections like Dengue fever or COVID-19, leading to timely diagnosis, treatment, and preventive measures to minimize transmission.	K	Large group lecture	MCQ & Short answer questions
Hepatitis Viruses				
MICR 42	Distinguish between the different types of hepatitis viruses and their modes of transmission. Analyze the clinical manifestations and complications of chronic hepatitis infections, such as cirrhosis and liver cancer.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Evaluate the current treatments and vaccination strategies for hepatitis infections. Clinical Benefits: Diagnosis and Management: Knowledge of hepatitis viruses' aids in diagnosing various hepatitis-related diseases and determining the appropriate antiviral therapy, reducing liver-related morbidity and mortality. Prevention and Vaccination: Vaccination strategies for Hepatitis A and Hepatitis B are essential in preventing infection, particularly in high-risk groups such as healthcare workers and intravenous drug users. Chronic Hepatitis Care: Understanding the chronic effects of hepatitis infections (e.g., Hepatitis C) enables early detection			
Retroviruses				
MICR 43	Explain the structure and replication cycle of retroviruses, with a focus on HIV. Understand the mechanisms of HIV pathogenesis, including the acute phase and AIDS progression. Evaluate the available antiretroviral therapies and their role in managing HIV infections. Clinical Benefits: HIV Diagnosis and Management: Understanding HIV pathogenesis helps in the early diagnosis of HIV infection and the initiation of antiretroviral therapy (ART), which significantly improves patient quality of life and reduces transmission. Prevention of Transmission: Knowledge of HIV transmission modes (sexual, vertical, etc.) aids in counseling patients on prevention strategies, such as safe sexual practices and mother-to-child transmission prevention. AIDS Complication Management: Clinicians can identify and manage opportunistic infections associated with HIV/AIDS, improving patient outcomes	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	and reducing complications in immunocompromised individuals.			
Pathogenicity of Viruses				
MICR 44	Define viral pathogenicity and understand the factors that contribute to viral virulence, such as genetic variability and host interaction. Analyze how different viruses evade host immune responses through mechanisms like antigenic variation, latency, and immune suppression. Evaluate the impact of viral mutations on disease progression and treatment efficacy. Clinical Benefits: Early Detection and Diagnosis: Understanding viral pathogenicity helps healthcare providers recognize early signs of infection, facilitating timely diagnosis and treatment. Treatment Approaches: Knowledge of how viruses interact with the immune system aids in developing targeted antiviral therapies and immunotherapies. Prevention Strategies: Insight into viral pathogenicity is critical for developing effective vaccines and public health strategies to prevent viral outbreaks and reduce transmission	K	Large group lecture	MCQ & Short answer questions
Immunity to Viral Diseases				
MICR 45	Describe the innate and adaptive immune responses to viral infections, including the roles of interferons, T-cells, and antibodies. Analyze how immunization and natural immunity protect against viral diseases. Evaluate the immune evasion strategies used by viruses and their impact on the effectiveness of vaccines and treatments. Clinical Benefits: Vaccine Development: Understanding immunity to viruses helps in the development of vaccines, improving patient protection against infectious	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	diseases like influenza, hepatitis, and COVID-19. Immune Response Monitoring: Knowledge of immune responses to viral infections aids in monitoring patients for immune system deficiencies and evaluating vaccine efficacy. Management of Viral Infections: Helps clinicians choose appropriate antiviral therapies and immune-modulating treatments based on the virus's ability to evade the immune system.			
Arboviruses - Hemorrhagic Fever				
MICR 46	Identify the key arboviruses responsible for hemorrhagic fever, such as Dengue, Ebola, Yellow Fever, and Zika virus. Understand the transmission cycle of arboviruses, focusing on vectors like mosquitoes, and the epidemiology of hemorrhagic fever outbreaks. Evaluate the clinical manifestations, complications, and management of hemorrhagic fever viruses. Clinical Benefits: Early Recognition: Knowledge of arboviral hemorrhagic fever symptoms allows for early diagnosis and intervention, improving survival rates. Infection Control: Understanding the transmission cycle of arboviruses aids in vector control strategies, reducing the spread of diseases Supportive Care: In severe cases, fluid resuscitation and management of coagulopathies are crucial to patient survival.	K	Large group lecture	MCQ & Short answer questions
Parvoviruses				
MICR 47	Describe the structure and replication cycle of Parvovirus B19, the virus responsible for erythema infectiosum (fifth disease). Analyze the clinical manifestations and complications associated with parvovirus	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	B19 infections, including fetal hydrops and aplastic anemia. Evaluate diagnostic approaches and management strategies for parvovirus B19 infections, particularly in immunocompromised patients and pregnant women. Clinical Benefits: Early Diagnosis of Erythema Infectiosum: Understanding parvovirus B19 aids in early diagnosis of fifth disease enabling proper management in pediatric patients. Fetal Risk Management: Knowledge of the risks associated with parvovirus B19 in pregnant women helps clinicians manage fetal hydrops and make informed decisions regarding prenatal care. Management of Aplastic Crisis: Recognizing the complications of parvovirus B19, such as aplastic anemia in immunocompromised individuals, ensures timely treatment			

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
How to deal with microbiology laboratory				
MICR 1	Understand laboratory safety protocols and the correct use of equipment. Identify and follow the proper procedures for handling bacterial cultures and samples. Apply effective hygiene and safety measures to prevent contamination in the microbiology lab. Clinical Benefits: Essential for maintaining a safe and contamination-free working environment. Helps in preventing cross-contamination of samples, which ensures accurate diagnostic results. Develops an understanding of biosafety principles, critical for healthcare professionals working in clinical microbiology labs.	K/S/C	Small group Lab	MCQ
Methods of sterilization				
MICR 2	Identify different sterilization methods (e.g., autoclaving, filtration, chemical sterilization). Understand the principles and appropriate use of each sterilization method. Apply sterilization techniques to ensure the aseptic preparation of laboratory materials. Clinical Benefits: Knowledge of sterilization is crucial for preventing hospital-acquired infections. Ensures proper sterilization of laboratory tools, improving diagnostic accuracy.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Contributes to patient safety by preventing contamination during diagnostic procedures.			
Bacteria is anywhere				
MICR 3	Understand the ubiquity of bacteria in the environment and the human body. Learn methods for isolating bacteria from various surfaces and environments. Explore how bacteria can influence human health in both positive and negative ways. Clinical Benefits: Helps in identifying and controlling bacterial contamination in clinical settings. Improves the understanding of bacterial spread, which is important for infection control in hospitals. Offers insights into the role of bacteria in health, such as normal flora and potential pathogens.	K/S/C	Small group Lab	MCQ
Culture media and staining methods				
MICR 4	Identify different types of culture media used in microbiology for bacterial growth. Understand the principles of bacterial staining (e.g., Gram stain, acid-fast stain). Apply appropriate media and staining techniques for bacterial identification. Clinical Benefits: Crucial for diagnosing bacterial infections by enabling bacterial isolation and identification. Helps in distinguishing between different bacterial types, influencing treatment decisions. Improves laboratory skills in preparing bacterial cultures and interpreting staining results.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Antibiotic susceptibility tests				
MICR 5	Understand the principles of antibiotic susceptibility testing (e.g., disk diffusion method). Learn how to interpret results from antibiotic susceptibility tests. Apply knowledge of bacterial resistance to select appropriate antibiotics for treatment. Clinical Benefits: Facilitates the correct selection of antibiotics to treat bacterial infections. Contributes to effective antibiotic stewardship by preventing the overuse of antibiotics. Helps clinicians manage antibiotic-resistant infections by choosing the most effective therapy.	K/S/C	Small group Lab	MCQ
Antibiotic susceptibility tests, Bacterial motility test				
MICR 6	Learn how to perform and interpret antibiotic susceptibility tests and bacterial motility tests. Understand how bacterial motility can influence infection and treatment outcomes. Analyze the correlation between motility and bacterial pathogenicity. Clinical Benefits: Essential for identifying antibiotic resistance patterns in clinical isolates. Helps in differentiating bacterial species based on their motility, aiding in accurate diagnosis. Contributes to the understanding of how motility affects bacterial virulence and infection	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Staphylococcus aureus cultivation				
MICR 7	Learn the techniques for isolating and cultivating Staphylococcus aureus. Understand the growth requirements and characteristics of Staphylococcus aureus. Identify different types of Staphylococcus aureus through colony morphology and biochemical tests. Clinical Benefits: Critical for diagnosing infections caused by Staphylococcus aureus, such as abscesses, pneumonia, and sepsis. Facilitates the identification of methicillin-resistant Staphylococcus aureus (MRSA), which impacts treatment decisions. Improves understanding of the pathogenicity of Staphylococcus aureus in healthcare-associated infections.	K/S/C	Small group Lab	MCQ
Staph. aureus coagulase test				
MICR 8	Understand the principle of the coagulase test and its role in identifying Staphylococcus aureus. Learn the technique for performing the coagulase test in a microbiology laboratory. Interpret the results of the coagulase test for diagnostic purposes. Clinical Benefits: Aids in distinguishing Staphylococcus aureus from other Staphylococcus species, which is vital for diagnosis and treatment. Helps in identifying virulent strains of Staphylococcus aureus that may be more difficult to treat. Critical for rapid diagnosis in hospital settings to prevent the spread of infections.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Streptococcus pyogens cultivation				
MICR 9	Learn how to isolate and cultivate Streptococcus pyogenes from clinical samples. Understand the culture requirements for optimal growth of Streptococcus pyogenes. Identify Streptococcus pyogenes through characteristic growth patterns and biochemical reactions. Clinical Benefits: Essential for diagnosing diseases caused by Streptococcus pyogenes, such as strep throat and rheumatic fever. Facilitates the early identification and treatment of Streptococcus pyogenes infections, preventing complications. Aids in the identification of potential carriers to reduce the spread of infection.	K/S/C	Small group Lab	MCQ
Pneumococ & Capsule staining technique				
MICR 10	Learn the capsule staining technique for identifying Streptococcus pneumoniae. Understand the role of the capsule in bacterial virulence and pathogenesis. Apply capsule staining in the diagnosis of pneumococcal infections. Clinical Benefits: Critical for diagnosing pneumococcal infections, such as pneumonia, meningitis, and otitis media. Helps identify the virulent forms of Streptococcus pneumoniae, guiding treatment decisions. Aids in understanding how the bacterial capsule contributes to immune evasion during infection.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Neisseria staining and oxidase test				
MICR 11	Learn how to perform Gram staining and oxidase testing for Neisseria species. Understand the diagnostic importance of these tests in identifying Neisseria gonorrhoeae and Neisseria meningitidis. Apply the oxidase test to differentiate between Neisseria species and other Gram-negative bacteria. Clinical Benefits: Essential for diagnosing gonorrhea and bacterial meningitis caused by Neisseria species. Helps in the rapid identification of Neisseria species in clinical settings, leading to prompt treatment. Contributes to understanding antibiotic resistance in Neisseria species.	K/S/C	Small group Lab	MCQ
Mycobacteria & Acid fast staining technique				
MICR 12	Understand the principle and application of acid-fast staining for identifying Mycobacterium species. Learn the procedure for performing acid-fast staining in laboratory settings. Identify Mycobacterium tuberculosis and other Mycobacterium species based on staining characteristics. Critical for diagnosing tuberculosis and leprosy, particularly in endemic areas. Helps in the early detection of Mycobacterium infections, facilitating appropriate treatment. Assists in identifying drug-resistant strains, improving treatment outcomes.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Clostridia tetani, perfringens lab techniques				
MICR 13	Learn the techniques for isolating and identifying Clostridium tetani and Clostridium perfringens. Understand the clinical significance of these pathogens in tetanus and gas gangrene. Apply appropriate laboratory tests to diagnose infections caused by Clostridium species. Clinical Benefits: Vital for the rapid diagnosis and treatment of tetanus and gas gangrene, which can be life-threatening. Contributes to understanding the virulence mechanisms of Clostridium species, such as toxin production. Helps in preventing the spread of Clostridium infections in clinical environments.	K/S/C	Small group Lab	MCQ
Immunological principles in lab diagnosis				
MICR 14	Understand the role of immunological principles in microbiological diagnostics. Learn how immune responses can be used to detect bacterial and viral infections. Apply immunological techniques in the laboratory for detecting antibodies and antigens. Clinical Benefits: Enhances the accuracy of diagnostic tests for infectious diseases through immunological techniques. Aids in the rapid diagnosis of infections, reducing the time to treatment. Contributes to understanding the body's immune response to infections, guiding treatment options.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Some immunological tests - Widal test, ABO test				
MICR 15	Understand the principles behind the Widal test and the ABO blood group test. Learn how to perform and interpret the results of these immunological tests. Analyze the clinical significance of the Widal test in diagnosing typhoid fever and the ABO test for blood transfusions. Clinical Benefits: Widal test: Crucial for diagnosing typhoid fever, especially in endemic areas. ABO test: Vital for ensuring compatibility in blood transfusions and preventing transfusion reactions. Provides valuable diagnostic tools for identifying bacterial infections and ensuring safe blood transfusions.	K/S/C	Small group Lab	MCQ
Enterobacteriaceae				
MICR 16	Understand the characteristics of Enterobacteriaceae family members, including their classification and pathogenicity. Learn how to culture and identify members of the Enterobacteriaceae family. Understand the diagnostic importance of differentiating between different Enterobacteriaceae species. Clinical Benefits: Important for diagnosing infections caused by members of the Enterobacteriaceae family, Assists in selecting appropriate antimicrobial treatment for infections caused by Enterobacteriaceae. Helps in identifying antibiotic-resistant strains, which are common in hospital-acquired infections.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
E. coli & Klebsiella cultivation and diagnosis				
MICR 17	Learn how to cultivate and diagnose Escherichia coli and Klebsiella species from clinical samples. Understand the pathogenicity and diseases caused by E. coli and Klebsiella. Apply biochemical tests to differentiate between E. coli and Klebsiella species. Clinical Benefits: Critical for diagnosing urinary tract infections, gastrointestinal infections, and pneumonia caused by E. coli and Klebsiella. Helps in identifying multidrug-resistant strains, particularly in hospital settings. Aids in selecting appropriate antibiotics to treat infections caused by E. coli and Klebsiella.	K/S/C	Small group Lab	MCQ
E. coli and Klebsiella				
MICR 18	Study the microbiological characteristics of E. coli and Klebsiella species. Learn the mechanisms of virulence and resistance in E. coli and Klebsiella. Analyze the clinical presentation and diagnostic techniques for infections caused by these bacteria. Clinical Benefits: Assists in the timely diagnosis and treatment of infections caused by E. coli and Klebsiella. Contributes to understanding antibiotic resistance patterns in these pathogens. Helps in managing and preventing hospital-acquired infections, particularly those caused by Klebsiella pneumoniae.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Salmonella and Shigella				
MICR 19	Learn the diagnostic methods for identifying Salmonella and Shigella species. Understand the diseases caused by Salmonella and Shigella, including typhoid fever and dysentery. Apply laboratory techniques to differentiate between Salmonella and Shigella infections. Clinical Benefits: Critical for diagnosing enteric infections caused by Salmonella and Shigella. Helps in preventing the spread of these pathogens, particularly in community settings. Facilitates the selection of appropriate antibiotics for treatment, reducing the risk of complications.	K/S/C	Small group Lab	MCQ
Salmonella and Shigella				
MICR 20	Understand the epidemiology and pathogenesis of Salmonella and Shigella species. Learn about the laboratory diagnostic tests used for Salmonella and Shigella. Interpret laboratory results to accurately diagnose infections caused by Salmonella and Shigella. Clinical Benefits: Important for diagnosing gastrointestinal infections and systemic diseases caused by these pathogens. Assists in the proper management of patients with Salmonella and Shigella infections. Facilitates infection control measures to prevent the spread of these pathogens.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Pseudomonas				
MICR 21	Learn the characteristics of Pseudomonas species, particularly Pseudomonas aeruginosa. Understand the diagnostic methods used to identify Pseudomonas species in clinical samples. Analyze the pathogenicity and virulence factors of Pseudomonas aeruginosa. Clinical Benefits: Essential for diagnosing infections caused by Pseudomonas aeruginosa, such as pneumonia, wound infections, and urinary tract infections. Helps in identifying multidrug-resistant strains, which are common in immunocompromised patients. Assists in selecting appropriate antimicrobial therapy for Pseudomonas infections	K/S/C	Small group Lab	MCQ
Proteus, Swarming phenomenon, Urease test				
MICR 22	Learn the techniques for isolating and cultivating Staphylococcus aureus. Understand the growth requirements and characteristics of Staphylococcus aureus. Identify different types of Staphylococcus aureus through colony morphology and biochemical tests. Clinical Benefits: Critical for diagnosing infections caused by Staphylococcus aureus, such as abscesses, pneumonia, and sepsis. Facilitates the identification of methicillin-resistant Staphylococcus aureus (MRSA), which impacts treatment decisions.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Improves understanding of the pathogenicity of Staphylococcus aureus in healthcare-associated			
Vibrio, slide & Sea Water Cultivation, TCBS				
MICR 23	Understand the characteristics of Vibrio species and their role in waterborne infections. Learn the technique for isolating Vibrio species from sea water samples and clinical specimens. Understand the principles and application of Thiosulfate Citrate Bile Salts Sucrose (TCBS) agar in the identification of Vibrio species. Clinical Benefits: Critical for diagnosing Vibrio infections, including cholera and gastroenteritis, especially in coastal and endemic areas. Helps in the timely diagnosis and treatment of Vibrio-related diseases, improving patient outcomes. Essential for epidemiological surveillance and prevention of outbreaks, particularly in regions with contaminated water sources.	K/S/C	Small group Lab	MCQ
Brucella, Principles of Lab Diagnosis				
MICR 24	Learn the diagnostic methods for identifying Brucella species, including blood cultures and serological tests. Understand the principles behind laboratory diagnosis of brucellosis, including bacterial isolation and biochemical tests. Explore the clinical manifestations of brucellosis and the importance of early diagnosis. Clinical Benefits:	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Crucial for diagnosing brucellosis, a zoonotic infection, which is important for occupational health in livestock workers. Aids in preventing chronic brucellosis by enabling early detection and appropriate antibiotic treatment. Improves understanding of brucellosis transmission, helping in public health efforts to control outbreaks.			
Corynebacterium				
MICR 25	Understand the microbiological characteristics and pathogenicity of Corynebacterium species, particularly Corynebacterium diphtheriae. Learn the laboratory techniques used to isolate and identify Corynebacterium species from clinical samples. Study the biochemical and cultural characteristics used to differentiate Corynebacterium species. Clinical Benefits: Important for diagnosing diphtheria, particularly in children and unvaccinated individuals. Facilitates rapid identification of Corynebacterium species, guiding appropriate treatment and prevention strategies. Aids in understanding the virulence mechanisms of Corynebacterium diphtheriae, such as toxin production.	K/S/C	Small group Lab	MCQ
Mycology Lab				
MICR 26	Understand the principles and techniques used in the isolation and identification of fungal species in clinical microbiology. Learn to differentiate between pathogenic and non-pathogenic fungi using laboratory	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	tests, such as fungal culture, microscopy, and biochemical assays. Apply proper staining techniques (e.g., KOH, India ink) and culturing methods to identify common fungi. Clinical Benefits: Essential for diagnosing fungal infections, including candidiasis, aspergillosis, and dermatophyte infections. Helps in distinguishing between fungal and bacterial infections, which is crucial for appropriate treatment. Contributes to the management of immunocompromised patients who are at higher risk for invasive fungal infections.			

Pharmacology

Third grade

Academic program discretion

This academic program description provides a brief overview of the key features of the program and the expected learning outcomes for the student, demonstrating whether the student has made the most of the available opportunities. It is accompanied by a description of each course within the program.

Educational 1- Establishment	University of Al-Ameed
2-Scientific Department	College of Medicine
3-Name of the Professional Academic Program.	Modified traditional curriculum
4-Final Graduation Certificate	M.B.Ch.B
5- Educational system: **Annual/courses/other**	Annual
6-Approved accreditation program	Applied for Iraqi National Guidelines on Standards for Established and Accrediting Medical Schools
7-Other external factors	1-Availability of relevant scientific research in the field of specialization 2-Access to global electronic networks 3-Access to traditional and digital libraries 4- Teaching aids such as data show and PowerPoint presentations 5- Availability of equipped classrooms 6- Use of free online communication platforms (e.g., Free Conference Call)
8-Date the description was written	2024/9/15

9- Objectives of the academic program:

Here are the key objectives of the pharmacology program for third-stage medical students, summarized in 5 points:

Understanding Drug Mechanisms: Learn how drugs interact with the body at the molecular and cellular levels, including their therapeutic effects and adverse reactions.

Pharmacokinetics and Pharmacodynamics: Grasp the processes of drug absorption, distribution, metabolism, excretion (ADME), and how these influence drug action and effectiveness.

Therapeutic Application and Side Effects: Gain knowledge of drug uses in various medical conditions and recognize potential side effects and toxicities.

Pharmacovigilance and Safety: Learn the importance of monitoring drug safety, reporting adverse reactions, and ensuring safe medication practices.

Clinical Integration and Ethical Considerations: Apply pharmacological knowledge in clinical settings, making informed drug choices, while considering ethical, legal, and patient safety aspects in drug therapy

10- Resources:

Text- and Supplementary Books

Approved Online Scientific Resources and Databases

Clinical Pharmacology (by Bennett, and Brown), 8th edition, Churchill Livingstone

Pharmacology \ Grade 3

Code: PHAR 302 8 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Introduction to pharmacology				
PHAR 1.1	Understand general terms used in pharmacology, expiry date, counterfeit medicine, ..	K	Large group lecture	MCQ & short answer questions
PHAR 1.2	Describe cellular targets for drug action and Outline general requirements for studying pharmacology	K	Large group lecture	MCQ & short answer questions
Drug administration				
PHAR 2.1	Define pharmacokinetics and explain major divisions	K	Large group lecture	MCQ & short answer questions
PHAR 2.2	Discuss routes of drug administration Describe major characteristics of each route of drug administration	K	Large group lecture	MCQ & short answer questions
Drug absorption				
PHAR 3.1	Discuss mechanisms of drug absorption of drugs from the GI tract	K	Large group lecture	MCQ & short answer questions
PHAR 3.2	Determine factors influencing drug absorption Define the term “bioavailability” of drugs and factors influencing it.	K	Large group lecture	MCQ & short answer questions
Drug distribution				
PHAR 4.1	Define factors affecting drug distribution: including blood flow, capillary perme-ability, plasma protein binding, and chemical properties of the	K	Large group lecture	MCQ & short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	drug, such as hydrophobicity or hydrophilicity. Volume of distribution as a measure of drug distribution.			
PHAR 4.2	Clinical significance of drug distribution: Impacts on drug efficacy, duration of action, and dosing. Competition and displacement from protein binding sites as a source of significant drug inter-actions, such as increased warfarin effect when displaced from albumin by most NSAIDs.	K	Large group lecture	MCQ & short answer questions
Metabolism and elimination				
PHAR 5.1	Understand the processes of drug metabolism and elimination, explaining the role of the liver and kidney in drug clearance, including phase I and phase II metabolic reactions, enzyme induction/ inhibition, and renal role in drug clearance.	K	Large group lecture	MCQ & short answer questions
PHAR 5.2	Apply pharmacokinetic principles to drug clearance; differentiate between first-order and zero-order kinetics, describe factors affecting drug elimination, and understand concepts such as half-life, steady-state concentration, and creatin-ine clearance in clinical settings.	K	Large group lecture	MCQ & short answer questions
Pharmacodynamics				
PHAR 6.1	Understand the mechanisms of drug action Explain the different types of drug targets (e.g. receptors, enzymes, trans-port proteins, ion channels) and describe how drugs interact with these targets to produce biological effects. Compare and contrast the four major types of receptors (ligand-gated ion channels, G-protein-coupled receptors,	K	Large group lecture	MCQ & short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	enzyme-linked receptors, and intracellular receptors) in terms of structure, function, and response duration.			
PHAR 6.2	Analyze drug-receptor interactions and their clinical implications: Differentiate between agonists (full, partial, inverse) and antagonists (competitive, irreversible, function-al, chemical) and their effects on receptor activity. Evaluate the concepts of potency, efficacy, therapeutic index, and receptor desensitization, and apply these principles to predict drug behavior in therapeutic or toxic contexts	K	Large group lecture	MCQ & short answer questions
Introduction for autonomic nervous system				
PHAR 7.1	Describe the anatomical divisions of the nervous system, including the central nervous system (CNS) and peripheral nervous system (PNS) explain their primary components (brain, spinal cord, and peripheral nerves).	K	Large group lecture	MCQ & short answer questions
PHAR 7.2	Understand the role and significance of the autonomic nervous system (ANS) within the nervous system, identify its key functions in regulating involuntary physiological processes.	K	Large group lecture	MCQ & short answer questions
Adrenergic pharmacology part 1				
PHAR 8.1	Understand the mechanism of action of adrenergic drugs, gain knowledge of how adrenergic drugs interact with alpha and beta adrenergic receptors to either stimulate or block their activity..	K	Large group lecture	MCQ & short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 8.2	Identify the therapeutic applications and side effects of adrenergic medications; recognizing the therapeutic uses of common adrenergic drugs (e.g. for treatment of asthma, hypertension, heart failure, anaphylaxis,…), as well as their potential side effects (e.g., tachycardia, hypertension, arrhythmias, …	K	Large group lecture	MCQ & short answer questions
Adrenergic pharmacology part 2				
PHAR 9.1	Understand the mechanism of action of adrenergic agonists and antagonists apart from those acting directly on adrenergic receptors e.g. centrally-acting medica-tions, MAO and COMT enzyme inhibitors, adrenergic neuron blockers, adrenergic neuron uptake inhibitors, ganglion blockers, …	K	Large group lecture	MCQ & short answer questions
PHAR 9.2	Identify the therapeutic applications and side effects of adrenergic medications; apart from those acting directly on adrenergic receptors as shown above in PHAR 9.1.	K	Large groups lecture	MCQ & short answer questions
Cholinergic agonist				
PHAR 10.1	Understand the mechanism of action and therapeutic applications of cholinergic agonists: Students will be able to explain how cholinergic agonists interact with muscarinic and nicotinic receptors, and describe their clinical uses in conditions such as glaucoma, myasthenia gravis, and Alzheimer's disease.	K	Large group lecture	MCQ & short answer questions
PHAR 10.2	Discuss the physiological effects and side effects of cholinergic agonists on the autonomic nervous system, such as bradycardia, increased glandular secre-tions, and smooth muscle contraction, and discuss the side effects resulting from these effects.	K	Large group lecture	MCQ & short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Cholinergic antagonist				
PHAR 11.1	Understand the mechanisms of action and therapeutic uses of cholinergic antagonists: Students will be able to describe how cholinergic antagonists block muscarinic and nicotinic receptors, and outline their clinical applications in conditions like motion sickness, intestinal and ureteral colic, overactive bladder, and Parkinson's disease.	K	Large group lecture	MCQ & short answer questions
PHAR 11.1	Students should be able to explain the physiological outcomes of cholinergic antagonism, including tachycardia, reduced glandular secretions, and smooth muscle relaxation, and discuss how these effects are utilized in various therapeutic settings or contribute to the side effects resulting from their use.	K	Large group lecture	MCQ & short answer questions
Neuromuscular-blocking drugs				
PHAR 12.1	Classify neuromuscular-blocking drugs into depolarizing and non-depolarizing agents, and explain their mechanisms of action.	K	Large group lecture	MCQ & short answer questions
PHAR 12.2	Describe the clinical applications and side effects of neuromuscular blockers in anesthesia, surgery, and critical care, as well as their reversal strategies.	K	Large group lecture	MCQ & short answer questions
Autacoids part 1				
PHAR 13.1	Discuss the types and physiological roles of the autacoids (e.g. histamine, serotonin, eicosanoids, bradykinin, …) in the body.	K	Large group lecture	MCQ & short answer questions
PHAR 13.2	Explain the clinical relevance of autacoids, including their role in inflammation, allergic reactions, and their therapeutic applications in conditions like asthma, peptic ulcer, inflammatory diseases, and for analgesia.	K	Large group lecture	MCQ & short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Autacoids part 2				
PHAR 14.1	Describe the biosynthesis, metabolism, and mechanism of action of key autacoids.	K	Large group lecture	MCQ & short answer questions
PHAR 14.2	Discuss the therapeutic applications of autacoid-modulating drugs, such as NSAIDs, antihistamines, and serotonin antagonists, in managing pain, infla-mmation, migraine, and cardiovascular conditions.	K	Large group lecture	MCQ & short answer questions
Respiratory Drugs				
PHAR 15.1	Understand the Pharmacology and Mechanism of Action of Respiratory Drugs Explain how bronchodilators (e.g., β_2-agonists, anticholinergics), corticosteroids, leukotriene inhibitors, and mucolytics work in treating respiratory conditions like asthma and COPD. Clinical Benefit: Helps in selecting the right drug for optimal airway management, improving patient outcomes.	K	Large group lecture	MCQ & short answer questions
PHAR 15.2	Demonstrate Safe and Effective Use of Respiratory Medications Identify appropriate indications, dosages, and potential side effects of common respiratory drugs. Recognize adverse effects such as tachycardia with β_2-agonists or oral thrush with inhaled corticosteroids and implement preventive measures. Clinical Benefit: Enhances patient adherence, minimizes side effects, and improves disease control	K	Large group lecture	MCQ & short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Antihypertensive drugs				
PHAR 16.1	classify antihypertensive drugs based on their mechanisms of action, including diuretics, beta-blockers, calcium channel blockers, ACE inhibitors, and ARBs	K	Large group lecture	MCQ& short answer questions
PHAR 16.2	Explain the clinical applications of antihypertensive drugs, their benefits in managing hypertension, and their role in preventing cardiovascular complications such as stroke and heart failure	K	Large group lecture	MCQ& short answer questions
Anti-anginal drugs				
PHAR 17.1	classify anti-anginal drugs into nitrates, beta-blockers, and calcium channel blockers, and explain their mechanisms of action in relieving myocardial ischemia.	K	Large group lecture	MCQ& short answer questions
PHAR 17.2	Describe the clinical applications of anti-anginal drugs in managing stable, unstable, and variant angina, along with their benefits in improving exercise tolerance and reducing cardiac workload.	K	Large group lecture	MCQ& short answer questions
Antiarrhythmic drugs				
PHAR 18.1	Classify antiarrhythmic drugs based on the Vaughan Williams classification and explain their mechanisms of action in regulating cardiac rhythm .Describe the	K	Large group lecture	MCQ& short answer questions
PHAR 18.2	clinical applications of antiarrhythmic drugs in managing conditions like atrial fibrillation, ventricular tachycardia, and other arrhythmias, along with their potential side effects.	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Heart failure				
PHAR 19.1	Explain the pathophysiology of heart failure, including its types (systolic vs. diastolic) and compensatory mechanisms.	K	Large group lecture	MCQ& short answer questions
PHAR 19.2	2Describe the clinical use of drugs such as ACE inhibitors, beta-blockers, diuretics, and inotropes in managing heart failure and improving patient outcomes1	K	QQ	MCQ& short answer questions
Anticoagulants				
PHAR 20.1	Classify anticoagulants into heparins, vitamin K antagonists, and direct oral anticoagulants (DOACs), and explain their mechanisms of action.	K	Large group lecture	MCQ& short answer questions
PHAR 20.2	Describe the clinical applications of anticoagulants in preventing and treating thromboembolic disorders such as deep vein thrombosis (DVT), pulmonary embolism (PE), and atrial fibrillation, along with their monitoring and potential complications.	K	Large group lecture	MCQ& short answer questions
Diuretics				
PHAR 21.1	Classify diuretics based on their site of action in the nephron, including loop diuretics, thiazides, potassium-sparing diuretics, and osmotic diuretics, and explain their mechanisms of action.		Large group lecture	MCQ& short answer questions
PHAR 21.2	describe the clinical applications of diuretics in managing conditions such as hypertension, heart failure, and edema, along with their potential side effects and electrolyte imbalances	K	Large group lecture	MCQ& short answer questions
Drugs for dyslipidemia				
PHAR 22.1	classify the main classes of drugs used to treat dyslipidemia, including statins, fibrates, bile acid sequestrants, niacin,	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	and PCSK9 inhibitors, and explain their mechanisms of action.			
PHAR 22.2	describe the clinical applications of dyslipidemia drugs in managing conditions such as hypercholesterolemia, hypertriglyceridemia, and their role in preventing cardiovascular diseases, including atherosclerosis and stroke.	K	Large group lecture	MCQ& short answer questions
Anemia				
PHAR 23.1	classify the types of anemia (e.g., iron-deficiency anemia, megaloblastic anemia, hemolytic anemia) and explain their underlying pathophysiology	K	Large group lecture	MCQ& short answer questions
PHAR 23.2	describe the clinical use of pharmacological agents in the treatment of anemia, including iron supplements, vitamin B12 and folic acid, erythropoiesis-stimulating agents (ESAs), and their potential side effect	K	Large group lecture	MCQ& short answer questions
Introduction to CNS pharmacology				
PHAR 24.1	Explain the basic principles of pharmacokinetics and pharmacodynamics as they relate to drugs acting on the central nervous system (CNS).	K	Large group lecture	MCQ& short answer questions
PHAR 24.2	classify major classes of CNS drugs (e.g., analgesics, anesthetics, antipsychotics, antidepressants, anticonvulsants) and describe their mechanisms of action, therapeutic uses, and potential side effects.	K	Large group lecture	MCQ& short answer questions
Drugs used to treat headache disorders				
PHAR 25.1	Classify the drugs used to treat different types of headaches, including acute and preventive treatments for migraines, tension-type headaches, and	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	cluster headaches, and explain their mechanisms of action.			
PHAR 25.2	Describe the clinical applications and potential side effects of common headache treatments.	K	Large group lecture	MCQ& short answer questions
Alzheimer disease and sclerosis				
PHAR 26.1	Explain the pathophysiology of Alzheimer's disease and multiple sclerosis, focusing on the underlying mechanisms such as amyloid plaques and neurofibrillary tangles in Alzheimer's, and demyelination in multiple sclerosis.	K	Large group lecture	MCQ& short answer questions
PHAR 26.2	.Describe the pharmacological treatments for Alzheimer's disease (e.g., cholinesterase inhibitors, NMDA antagonists) and multiple sclerosis (e.g., disease-modifying therapies, corticosteroids), including their mechanisms of action, clinical applications, and potential side effects	k	Large group lecture	MCQ& short answer questions
Drugs of Parkinson disease				
PHAR 27.1	Classify the main pharmacological treatments for Parkinson’s disease, including dopaminergic agents (e.g., levodopa, dopamine agonists), MAO-B inhibitors, and COMT inhibitors, and explain their mechanisms of action.	K	Large group lecture	MCQ& short answer questions
PHAR 27.2	Describe the clinical applications, benefits, and potential side effects of Parkinson’s disease medications, focusing on improving motor symptoms and managing side effects such as dyskinesia and motor fluctuations.	K	Large group lecture	MCQ& short answer questions
Anti-depressant drugs				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 28.1	Classify the major classes of antidepressant drugs, including selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), and monoamine oxidase inhibitors (MAOIs), and explain their mechanisms of action.	K	Large group lecture	MCQ& short answer questions
PHAR 28.2	Describe the clinical applications, benefits, and potential side effects of antidepressant drugs in managing depression, anxiety disorders, and other mood disorder	K	Large group lecture	MCQ& short answer questions
Anti-psychotic drugs				
PHAR 29.1	Classify antipsychotic drugs into first-generation (typical) and second-generation (atypical) antipsychotics, and explain their mechanisms of action, particularly their effects on dopamine and serotonin receptors.	K	Large group lecture	MCQ& short answer questions
PHAR 29.2	Describe the clinical applications, benefits, and potential side effects of antipsychotic drugs in managing conditions such as schizophrenia, bipolar disorder, and acute psychotic episodes, along with their long-term use considerations	K	Large group lecture	MCQ& short answer questions
Anti-epileptics drugs				
PHAR 30.1	Understand the Mechanisms of Action of Anti-Epileptic Drugs (AEDs): Explain how different AEDs work, including sodium channel blockers, GABA enhancers, and calcium channel modulators. Clinical Benefit: Helps in selecting the most appropriate drug for different	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	seizure types and minimizing side effects.			
PAHR 30.2	Demonstrate Knowledge of AED Selection and Management in Patients: Identify the first-line and alternative AEDs for focal and generalized seizures. Understand dose adjustments, side effect management, and drug interactions. Clinical Benefit: Enhances patient safety, improves seizure control, and reduces adverse drug reactions.	K	Large group lecture	MCQ & short answer questions
Anxiolytic and hypnotic drugs part 1				
PHAR 31.1	Classify anxiolytic and hypnotic drugs, including benzodiazepines, non-benzodiazepine sedatives, and barbiturates, and explain their mechanisms of action on GABA receptors in the central nervous system.	K	Large group lecture	MCQ& short answer questions
PHAR 31.2	Describe the clinical applications of anxiolytic and hypnotic drugs in treating anxiety disorders, insomnia, and acute stress, including their onset of action, duration, and potential side effects	K	Large group lecture	MCQ& short answer questions
Anxiolytic and hypnotic drugs part 2				
PHAR 32.1	Explain the pharmacokinetics and adverse effects of anxiolytic and hypnotic drugs, focusing on tolerance, dependence, and withdrawal symptoms associated with long-term use.	K	Large group lecture	MCQ& short answer questions
PHAR 32.2	Discuss alternative therapies to traditional anxiolytic and hypnotic drugs, including selective serotonin reuptake inhibitors (SSRIs) for anxiety and melatonin agonists for insomnia, and their clinical applications.	K	Large group lecture	MCQ& short answer questions
Epilepsy				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 33.1	Classify the different types of seizures (e.g., generalized, focal) and explain the underlying pathophysiology of epilepsy, focusing on the role of abnormal neuronal excitability.	K	Large group lecture	MCQ& short answer questions
PHAR 33.2	Describe the pharmacological treatments for epilepsy, including antiepileptic drugs (AEDs) such as sodium channel blockers, GABA enhancers, and glutamate inhibitors, along with their mechanisms of action, clinical uses, and potential side effects	K	Large group lecture	MCQ& short answer questions
General anesthetics				
PHAR 34.1	Understand the Mechanisms of General Anesthetics Act on GABA and NMDA receptors to induce anesthesia. Clinical Benefit: Helps in selecting appropriate anesthetic agents for patient safety.	K	Large group lecture	MCQ& short answer questions
PHAR 34.2	Demonstrate Safe Use of General Anesthetics Recognize indications, contraindications, and complications (e.g., hypotension, malignant hyperthermia). Clinical Benefit: Enhances perioperative safety and reduces adverse effects.	K	Large group lecture	MCQ& short answer questions
Local Anesthetic Drugs				
PHAR 35.1	Understand the Mechanism of Action and Classification of Local Anesthetics. Explain how local anesthetics block sodium channels to prevent nerve conduction. Differentiate between amide (e.g., lidocaine, bupivacaine) and ester (e.g., procaine, tetracaine) anesthetics.	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Clinical Benefit: Helps in selecting the appropriate anesthetic for different procedures, ensuring effective pain control.			
PHAR 35.2	Recognize and Manage Local Anesthetic Toxicity. Identify signs of Local Anesthetic Systemic Toxicity (LAST) (e.g., CNS symptoms, cardiac toxicity). Understand management strategies, including lipid emulsion therapy for severe toxicity. Clinical Benefit: Enhances patient safety by preventing and managing adverse effects effectively	K	Large group lecture	MCQ& short answer questions
Opioids				
PHAR 36.1	Classify opioid drugs based on their receptor binding properties (e.g., mu, kappa, delta receptors) and explain their mechanisms of action in pain modulation and their effects on the central nervous system.	K	Large group lecture	MCQ& short answer questions
PHAR 36.2	Describe the clinical applications of opioids in managing acute and chronic pain, including their potential side effects such as tolerance, dependence, and respiratory depression, and the strategies to mitigate these risks	K	Large group lecture	MCQ& short answer questions
Antiemetics				
PHAR 37.1	Classify antiemetic drugs based on their mechanisms of action, including dopamine antagonists, serotonin (5-HT3) antagonists, antihistamines, and corticosteroids, and explain how they prevent nausea and vomiting.	K	Large group lecture	MCQ& short answer questions
PHAR 37.2	Describe the clinical applications of antiemetic drugs in managing nausea and vomiting associated with conditions such as chemotherapy, motion sickness, and post-operative	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	recovery, along with their potential side effects.			
Peptic ulcer				
PHAR 38.1	Explain the pathophysiology of peptic ulcers, including the role of Helicobacter pylori infection, gastric acid hypersecretion, and mucosal protection in ulcer formation.	K	Large group lecture	MCQ& short answer questions
PHAR 38.2	Describe the pharmacological treatments for peptic ulcers, including proton pump inhibitors (PPIs), H2 receptor antagonists, antibiotics (for H. pylori), and antacids, and discuss their mechanisms of action, clinical applications, and potential side effects.	K	Large group lecture	MCQ& short answer questions
Constipation				
PHAR39.1	Classify the different causes of constipation, including primary (functional) and secondary (due to underlying diseases or medications), and explain the pathophysiology of each type.	K	Large group lecture	MCQ& short answer questions
PHAR 39.2	Describe the pharmacological treatments for constipation, including bulk-forming agents, stool softeners, osmotic laxatives, stimulant laxatives, and prokinetic drugs, and discuss their mechanisms of action, clinical applications, and potential side effects	K	Large group lecture	MCQ& short answer questions
Diarrhea				
PHAR 40.1	Classify the different types of diarrhea, including acute, chronic, and infectious diarrhea, and explain their underlying causes and pathophysiology.	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 40.2	Describe the pharmacological treatments for diarrhea, including antimotility agents (e.g., loperamide), adsorbents, antibiotics (for infectious causes), and oral rehydration solutions (ORS), and discuss their mechanisms of action, clinical applications, and potential side effects.	K	Large group lecture	& short answer questions MCQ
Pharmacology-osteoporosis				
PHAR 41.1	Explain the pathophysiology of osteoporosis, including the role of bone resorption and formation, and the impact of hormonal changes (e.g., estrogen deficiency) on bone density.	K/S/A	Large group lecture	MCQ& short answer questions
PHAR 41.2	Describe the pharmacological treatments for osteoporosis. discuss their mechanisms of action, clinical applications, and potential side effects.	K/S/A	Large group lecture	MCQ& short answer questions
Anti-rheumatic and DMARD				
PHAR 42.1	Classify anti-rheumatic drugs into non-biologic DMARDs (e.g., methotrexate, sulfasalazine) and biologic DMARDs (e.g., TNF inhibitors, IL-6 inhibitors). explain their mechanisms of action in modulating the immune system to reduce inflammation in conditions like rheumatoid arthritis.	K/S/A	Large group lecture	MCQ& short answer questions
PHAR 42.2	Describe the clinical applications of DMARDs in managing autoimmune diseases such as rheumatoid arthritis, psoriatic arthritis, and lupus discuss their potential side effects, including immunosuppression and increased infection risk.	K/S/A	Large group lecture	MCQ& short answer questions
Pharmacology gout				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 43.1	Explain the pathophysiology of gout, focusing on the accumulation of uric acid crystals in joints and the role of hyperuricemia in the development of acute gout attacks.	K	Large group lecture	MCQ& short answer questions
PHAR 43.2	Describe the pharmacological treatments for gout, including drugs that reduce uric acid production (e.g., allopurinol, febuxostat), drugs that increase uric acid excretion (e.g., probenecid), and anti-inflammatory agents (e.g., colchicine, NSAIDs) discuss their mechanisms of action, clinical applications, and potential side effects	K	Large group lecture	MCQ& short answer questions
Pharmacology-obesity				
PHAR 44.1	Explain the pathophysiology of obesity, including the role of energy balance, genetic factors, and hormonal regulation (e.g., leptin, ghrelin) in the development of obesity.	K	Large group lecture	MCQ& short answer questions
PHAR 44.2	Describe the pharmacological treatments for obesity, including appetite suppressants (e.g., phentermine, liraglutide), lipase inhibitors (e.g., orlistat), and other weight loss agents (e.g., GLP-1 receptor agonists), discuss their mechanisms of action, clinical applications, and potential side effects.	K	Large group lecture	MCQ& short answer questions
Non-steroidal-anti-inflammatory drugs				
PHAR 45.1	Classify NSAIDs based on their mechanisms of action, including COX-1 and COX-2 inhibition, and explain how they reduce inflammation, pain, and fever.	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 45.2	Describe the clinical applications of NSAIDs in managing conditions such as arthritis, pain, and dysmenorrhea, and discuss their potential side effects, including gastrointestinal bleeding, renal impairment, and cardiovascular risks.	K	Large group lecture	MCQ& short answer questions
Introduction to Antimicrobial drugs				
PHAR 46.1	Classify antimicrobial drugs into their major classes, including antibiotics, antifungals, antivirals, and antiprotozoals, and explain their mechanisms of action in inhibiting microbial growth or replication.	K	Large group lecture	MCQ& short answer questions
PHAR 46.2	Describe the clinical applications of antimicrobial drugs in treating bacterial, viral, fungal, and parasitic infections, and discuss their spectrum of activity, potential side effects, and the importance of antibiotic stewardship to prevent resistance.	K	Large group lecture	MCQ& short answer questions
Beta-lactam drugs				
PHAR 47.1	Classify beta-lactam antibiotics, including penicillins, cephalosporins, monobactams, and carbapenems, and explain their mechanisms of action in inhibiting bacterial cell wall synthesis.	K	Large group lecture	MCQ& short answer questions
PHAR 47.2	Describe the clinical applications of beta-lactam drugs in treating a variety of bacterial infections, including respiratory, urinary, and skin infections, and discuss their potential side effects, such as allergic reactions and the development of resistance.	K	Large group lecture	MCQ& short answer questions
Inhibitors of protein synthesis				
PHAR 48.1	Classify the major classes of protein synthesis inhibitors, including macrolides, tetracyclines, aminoglycosides, and chloramphenicol, and explain their	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	mechanisms of action in inhibiting bacterial ribosomal function and protein production.			
PHAR 48.2	Describe the clinical applications of protein synthesis inhibitors in treating bacterial infections, their spectrum of activity, and their potential side effects, such as gastrointestinal disturbances, ototoxicity, and nephrotoxicity.	K	Large group lecture	MCQ& short answer questions
Quinolones				
PHAR 49.1	Explain the mechanism of action of quinolones, focusing on their inhibition of bacterial DNA gyrase and topoisomerase IV, which are essential for DNA replication and transcription.	K	Large group lecture	MCQ& short answer questions
PHAR 49.2	Describe the clinical applications of quinolones in treating a variety of bacterial infections, including urinary tract infections, respiratory infections, and gastrointestinal infections, as well as their potential side effects such as tendonitis, QT prolongation, and gastrointestinal disturbances.	K	Large group lecture	MCQ& short answer questions
Anti mycobacterial drugs				
PHAR 50.1	Classify the main anti-mycobacterial drugs used in the treatment of tuberculosis (TB), including first-line drugs (e.g., isoniazid, rifampin, pyrazinamide, ethambutol) and second-line drugs (e.g., fluoroquinolones, aminoglycosides), and explain their mechanisms of action.	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHAR 50.2	Describe the clinical applications of anti-mycobacterial drugs in treating tuberculosis, including the importance of combination therapy for drug-resistant TB. discuss their potential side effects, such as hepatotoxicity, neuropathy, and visual disturbances.	K	Large group lecture	MCQ& short answer questions
Antiviral drugs				
PHAR 51.1	Classify antiviral drugs based on their mechanisms of action, including inhibitors of viral entry, replication, and release, such as nucleoside analogs, protease inhibitors, and neuraminidase inhibitors.	K	Large group lecture	MCQ& short answer questions
PHAR 51.2	Describe the clinical applications of antiviral drugs in treating viral infections like influenza, HIV, herpes simplex virus (HSV), and hepatitis, and discuss their potential side effects and the challenges of antiviral resistance.	K	Large group lecture	MCQ& short answer questions
Antifungal drugs				
PHAR 52.1	Classify antifungal drugs into major classes, including azoles, polyenes, echinocandins, and allylamines, and explain their mechanisms of action in inhibiting fungal cell membrane synthesis or cell wall formation.	K	Large group lecture	MCQ& short answer questions
PHAR 52.2	Describe the clinical applications of antifungal drugs in treating common fungal infections, such as candidiasis, aspergillosis, and dermatophytosis, and discuss their potential side effects, such as hepatotoxicity, nephrotoxicity, and drug interactions.	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Antiprotozoal drugs				
PHAR 53.1	Classify antiprotozoal drugs into their major classes, including antimalarials (e.g., chloroquine, artemisinin), antileishmanial (e.g., miltefosine), and antiamoebic agents (e.g., metronidazole), and explain their mechanisms of action in inhibiting protozoan growth and replication.	K	Large group lecture	MCQ& short answer questions
PHAR 53.2	Describe the clinical applications of antiprotozoal drugs in treating diseases caused by protozoan infections, such as malaria, leishmaniasis, and giardiasis, and discuss their potential side effects, such as gastrointestinal disturbances, neurotoxicity, and drug resistance.	K	Large group lecture	MCQ& short answer questions
Anthelmintic drugs				
PHAR 54.1	Understand the Mechanism of Action and Classification of Anthelmintic Drug Learn how different classes of anthelmintic drugs work, their targets, and their pharmacological effects on parasitic worms.	K	Large group lecture	MCQ& short answer questions
PHAR 54.2	Apply Knowledge of Anthelmintic Drugs in Clinical Practice(Clinical Benefit) identify appropriate anthelmintic treatment for specific helminth infections, ensuring effective parasite elimination while minimizing side effects and drug resistance.	K	Large group lecture	MCQ& short answer questions
Antidiabetic drugs				
PHAR 54.1	Understand the Classification and Mechanisms of Action of Antidiabetic Drugs Learn how different classes of antidiabetic drugs work, their	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	pharmacological effects, and their role in diabetes management.			
PHAR 54.2	Apply Evidence-Based Drug Selection in Clinical Practice (Clinical Benefit) Identify and prescribe appropriate antidiabetic therapy based on patient-specific factors such as blood glucose levels, comorbidities, risk of hypoglycemia, and cardiovascular or renal benefits	K	Large group lecture	MCQ& short answer questions
Thyroid hormones				
PHAR 55.1	Understand the Mechanism of Action, Pharmacokinetics, and Functions of Thyroid Hormone Drugs. Learn how thyroid hormone drugs (e.g., levothyroxine, liothyronine) work, their metabolism.	K	Large group lecture	MCQ& short answer questions
PHAR 55.2	Apply Thyroid Hormone Therapy in Clinical Practice (Clinical Benefit) Select and adjust appropriate thyroid hormone replacement therapy based on patient-specific factors (e.g., TSH levels, comorbidities, age) to ensure effective treatment of hypothyroidism and other thyroid disorders.	K	Large group lecture	MCQ& short answer questions
Adrenocorticosteroids				
PHAR 56.1	Understand the Classification, Mechanism of Action, and Physiological Effects of Adrenocorticosteroids Learn about glucocorticoids and mineralocorticoids, their roles in metabolism, immune response, and electrolyte balance.	K	Large group lecture	MCQ& short answer questions
PHAR 56.2	Apply Adrenocorticosteroid Therapy in Clinical Practice (Clinical Benefit) Appropriately prescribe and manage corticosteroid therapy for conditions like adrenal insufficiency,	K	Large group lecture	MCQ& short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	inflammation, and autoimmune diseases while minimizing side effects such as adrenal suppression and osteoporosis.			
Complementary medicine: Drug – Drug, Herb-drug interaction				
PHAR 57.1	1.Remembering: Define complementary medicine and herb–drug interaction. 2.Explain Explain the common mechanisms of herb–drug interactions (e.g., CYP450 enzyme induction/inhibition, absorption changes). 3.Identify potential herb–drug interactions in given clinical case scenarios (e.g., warfarin + ginseng, St. John's wort + oral contraceptives). 4.Analyzing: Differentiate between beneficial and harmful herb–drug interactions in patient management. 5- Evaluate Propose safe strategies for pharmacists to counsel patients on preventing dangerous herb–drug interactions.	K	Large group lecture	MCQ& short answer questions

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Pharmaceutical dosage forms				
PHAR1.1	Understand the Types, Characteristics, and Functions of Pharmaceutical Dosage Forms. Learn about various dosage forms (e.g., tablets, capsules, injections, topical formulations), their design, and how they affect drug absorption, distribution, and efficacy.	k/S/C	small groups lab	MCQ
PHAR1.2	Apply Knowledge of Dosage Forms in Clinical Practice (Clinical Benefit) Select the appropriate dosage form based on patient needs, drug properties, and the therapeutic goals, considering factors like patient compliance, onset of action, and side effects.	K/S/C	small groups lab	MCQ
Routes of drug administration				
PHAR2.1	Understand the Different Routes of Drug Administration and Their Characteristics. Learn about the various routes of drug administration (e.g., oral, intravenous, intramuscular, subcutaneous, topical), their absorption mechanisms, advantages, and disadvantages.	k/S/C	Small groups lab	MCQ
PHAR 2.2	Apply the Appropriate Route of Administration in Clinical Practice (Clinical Benefit) Select the most effective and appropriate route of drug administration based on the drug's properties, the patient's condition, and therapeutic goals to ensure optimal drug delivery and minimize adverse effects	K/S/C	Small groups lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Calculation of pharmacokinetic parameters				
PHAR 3.1	Understand the Key Pharmacokinetic Parameters and Their Calculation. Learn about the key pharmacokinetic parameters (e.g., half-life, clearance, volume of distribution, and bioavailability) and how to calculate them using drug concentration-time data.	k/S/C	Small groups lab	MCQ
PHAR 3.2	Apply Pharmacokinetic Calculations in Clinical Practice (Clinical Benefit) Use pharmacokinetic parameters to optimize drug dosing, adjust for patient-specific factors (e.g., renal or hepatic impairment), and ensure therapeutic drug levels while minimizing toxicity.	K/S/C	Small groups lab	MCQ
Prescription-order writing				
PHAR 4.1	Understand the Components and Legal Requirements of a Prescription. Learn about the essential components of a prescription (e.g., patient information, drug name, dosage, frequency, duration) and the legal requirements to ensure safe and accurate prescribing.	k/S/C	Small groups lab	MCQ

PHAR 4.2	Apply Proper Prescription Writing in Clinical Practice (Clinical Benefit) Write clear, accurate prescriptions that follow legal and clinical guidelines, considering factors like drug interactions, patient conditions, and cost- effectiveness to ensure patient safety and optimal therapeutic outcomes	K/S/C	Small groups lab	MCQ
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Drug-induced discoloration of urine				
PHAR 5.1	Understand the Mechanisms and Causes of Drug-Induced Urine Discoloration. Learn about the various drugs (e.g., rifampin, phenazopyridine, levodopa) that can cause changes in urine color, and understand the underlying pharmacological mechanisms behind these effects.	k/S/C	Small groups lab	MCQ
PHAR 5.2	Identify and Manage Drug-Induced Urine Discoloration in Clinical Practice (Clinical Benefit) Recognize the clinical significance of drug-induced urine discoloration, differentiate it from pathological causes, and provide patient education to alleviate concerns while managing the underlying condition or adjusting treatment if necessary.	K/S/C	Small groups lab	MCQ
Drug discovery and development; toxicity evaluation and clinical trials				

PHAR 6.1	Understand the Drug Discovery and Development Process Learn the stages of drug discovery and development, from preclinical research, lead compound identification, and optimization, to clinical trials and regulatory approval.	K/S/C	Small groups lab	MCQ
PHAR 6.2	Apply Knowledge of Toxicity Evaluation and Clinical Trials in Drug Development (Clinical Benefit) Understand the importance of toxicity evaluation and preclinical studies to ensure drug safety, and learn how clinical trials are designed and conducted to assess drug efficacy and safety, ultimately benefiting patient care and regulatory compliance.	K/S/C	Small groups lab	MCQ
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Pharmaceutical dosage forms				
PHAR1.1	Understand the Types, Characteristics, and Functions of Pharmaceutical Dosage Forms. Learn about various dosage forms (e.g., tablets, capsules, injections, topical formulations), their design, and how they affect drug absorption, distribution, and efficacy.	k/S/C	small groups lab	MCQ
PHAR1.2	Apply Knowledge of Dosage Forms in Clinical Practice (Clinical Benefit) Select the appropriate dosage form based on patient needs, drug properties, and the therapeutic goals, considering factors like patient compliance, onset of action, and side effects.	K/S/C	small groups lab	MCQ
Routes of drug administration				

PHAR2.1	Understand the Different Routes of Drug Administration and Their Characteristics. Learn about the various routes of drug administration (e.g., oral, intravenous, intramuscular, subcutaneous, topical), their absorption mechanisms, advantages, and disadvantages.	k/S/C	Small groups lab	MCQ
PHAR 2.2	Apply the Appropriate Route of Administration in Clinical Practice (Clinical Benefit) Select the most effective and appropriate route of drug administration based on the drug's properties, the patient's condition, and therapeutic goals to ensure optimal drug delivery and minimize adverse effects	K/S/C	Small groups lab	MCQ
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Calculation of pharmacokinetic parameters				
PHAR 3.1	Understand the Key Pharmacokinetic Parameters and Their Calculation. Learn about the key pharmacokinetic parameters (e.g., half-life, clearance, volume of distribution, and bioavailability) and how to calculate them using drug concentration-time data.	k/S/C	Small groups lab	MCQ
PHAR 3.2	Apply Pharmacokinetic Calculations in Clinical Practice (Clinical Benefit) Use pharmacokinetic parameters to optimize drug dosing, adjust for patient-specific factors (e.g., renal or hepatic impairment), and ensure therapeutic drug levels while minimizing toxicity.	K/S/C	Small groups lab	MCQ

Prescription-order writing				
PHAR 4.1	Understand the Components and Legal Requirements of a Prescription. Learn about the essential components of a prescription (e.g., patient information, drug name, dosage, frequency, duration) and the legal requirements to ensure safe and accurate prescribing.	k/S/C	Small groups lab	MCQ
PHAR 4.2	Apply Proper Prescription Writing in Clinical Practice (Clinical Benefit) Write clear, accurate prescriptions that follow legal and clinical guidelines, considering factors like drug interactions, patient conditions, and cost- effectiveness to ensure patient safety and optimal therapeutic outcomes	K/S/C	Small groups lab	MCQ
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Drug-induced discoloration of urine				
PHAR 5.1	Understand the Mechanisms and Causes of Drug-Induced Urine Discoloration. Learn about the various drugs (e.g., rifampin, phenazopyridine, levodopa) that can cause changes in urine color, and understand the underlying pharmacological mechanisms behind these effects.	k/S/C	Small groups lab	MCQ

PHAR 5.2	Identify and Manage Drug-Induced Urine Discoloration in Clinical Practice (Clinical Benefit) Recognize the clinical significance of drug-induced urine discoloration, differentiate it from pathological causes, and provide patient education to alleviate concerns while managing the underlying condition or adjusting treatment if necessary.	K/S/C	Small groups lab	MCQ
Drug discovery and development; toxicity evaluation and clinical trials				
PHAR 6.1	Understand the Drug Discovery and Development Process Learn the stages of drug discovery and development, from preclinical research, lead compound identification, and optimization, to clinical trials and regulatory approval.	K/S/C	Small groups lab	MCQ
PHAR 6.2	Apply Knowledge of Toxicity Evaluation and Clinical Trials in Drug Development (Clinical Benefit) Understand the importance of toxicity evaluation and preclinical studies to ensure drug safety, and learn how clinical trials are designed and conducted to assess drug efficacy and safety, ultimately benefiting patient care and regulatory compliance.	K/S/C	Small groups lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Pharmaceutical dosage forms				
PHAR1.1	Understand the Types, Characteristics, and Functions of Pharmaceutical Dosage Forms. Learn about various dosage forms (e.g., tablets, capsules, injections, topical formulations), their design, and how they affect drug absorption, distribution, and efficacy.	k/S/C	small groups lab	MCQ
PHAR1.2	Apply Knowledge of Dosage Forms in Clinical Practice (Clinical Benefit) Select the appropriate dosage form based on patient needs, drug properties, and the therapeutic goals, considering factors like patient compliance, onset of action, and side effects.	K/S/C	small groups lab	MCQ
Routes of drug administration				
PHAR2.1	Understand the Different Routes of Drug Administration and Their Characteristics. Learn about the various routes of drug administration (e.g., oral, intravenous, intramuscular, subcutaneous, topical), their absorption mechanisms, advantages, and disadvantages.	k/S/C	Small groups lab	MCQ
PHAR 2.2	Apply the Appropriate Route of Administration in Clinical Practice (Clinical Benefit) Select the most effective and appropriate route of drug administration based on the drug's properties, the patient's condition, and therapeutic goals to ensure	K/S/C	Small groups lab	MCQ

	optimal drug delivery and minimize adverse effects			
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Calculation of pharmacokinetic parameters				
PHAR 3.1	Understand the Key Pharmacokinetic Parameters and Their Calculation. Learn about the key pharmacokinetic parameters (e.g., half-life, clearance, volume of distribution, and bioavailability) and how to calculate them using drug concentration-time data.	k/S/C	Small groups lab	MCQ
PHAR 3.2	Apply Pharmacokinetic Calculations in Clinical Practice (Clinical Benefit) Use pharmacokinetic parameters to optimize drug dosing, adjust for patient-specific factors (e.g., renal or hepatic impairment), and ensure therapeutic drug levels while minimizing toxicity.	K/S/C	Small groups lab	MCQ
Prescription-order writing				
PHAR 4.1	Understand the Components and Legal Requirements of a Prescription. Learn about the essential components of a prescription (e.g., patient information, drug name, dosage, frequency, duration) and the legal requirements to ensure safe and accurate prescribing.	k/S/C	Small groups lab	MCQ
PHAR 4.2	Apply Proper Prescription Writing in Clinical Practice (Clinical Benefit) Write clear, accurate prescriptions that follow legal and clinical guidelines, considering factors like	K/S/C	Small groups lab	MCQ

	drug interactions, patient conditions, and cost- effectiveness to ensure patient safety and optimal therapeutic outcomes			
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Drug-induced discoloration of urine				
PHAR 5.1	Understand the Mechanisms and Causes of Drug-Induced Urine Discoloration. Learn about the various drugs (e.g., rifampin, phenazopyridine, levodopa) that can cause changes in urine color, and understand the underlying pharmacological mechanisms behind these effects.	k/S/C	Small groups lab	MCQ
PHAR 5.2	Identify and Manage Drug-Induced Urine Discoloration in Clinical Practice (Clinical Benefit) Recognize the clinical significance of drug-induced urine discoloration, differentiate it from pathological causes, and provide patient education to alleviate concerns while managing the underlying condition or adjusting treatment if necessary.	K/S/C	Small groups lab	MCQ
Drug discovery and development; toxicity evaluation and clinical trials				
PHAR 6.1	Understand the Drug Discovery and Development Process Learn the stages of drug discovery and development, from preclinical research, lead compound identification, and optimization, to clinical trials and regulatory approval.	K/S/C	Small groups lab	MCQ
PHAR 6.2	Apply Knowledge of Toxicity Evaluation and Clinical Trials in Drug Development (Clinical Benefit)	K/S/C	Small groups lab	MCQ

	Understand the importance of toxicity evaluation and preclinical studies to ensure drug safety, and learn how clinical trials are designed and conducted to assess drug efficacy and safety, ultimately benefiting patient care and regulatory compliance.			
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Pharmaceutical dosage forms				
PHAR1.1	Understand the Types, Characteristics, and Functions of Pharmaceutical Dosage Forms. Learn about various dosage forms (e.g., tablets, capsules, injections, topical formulations), their design, and how they affect drug absorption, distribution, and efficacy.	k/S/C	small groups lab	MCQ
PHAR1.2	Apply Knowledge of Dosage Forms in Clinical Practice (Clinical Benefit) Select the appropriate dosage form based on patient needs, drug properties, and the therapeutic goals, considering factors like patient compliance, onset of action, and side effects.	K/S/C	small groups lab	MCQ
Routes of drug administration				
PHAR2.1	Understand the Different Routes of Drug Administration and Their Characteristics. Learn about the various routes of drug administration (e.g., oral, intravenous, intramuscular, subcutaneous, topical), their absorption mechanisms, advantages, and disadvantages.	k/S/C	Small groups lab	MCQ
PHAR 2.2	Apply the Appropriate Route of Administration in Clinical Practice (Clinical Benefit)	K/S/C	Small groups lab	MCQ

	Select the most effective and appropriate route of drug administration based on the drug's properties, the patient's condition, and therapeutic goals to ensure optimal drug delivery and minimize adverse effects			
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Calculation of pharmacokinetic parameters				
PHAR 3.1	Understand the Key Pharmacokinetic Parameters and Their Calculation. Learn about the key pharmacokinetic parameters (e.g., half-life, clearance, volume of distribution, and bioavailability) and how to calculate them using drug concentration-time data.	k/S/C	Small groups lab	MCQ
PHAR 3.2	Apply Pharmacokinetic Calculations in Clinical Practice (Clinical Benefit) Use pharmacokinetic parameters to optimize drug dosing, adjust for patient-specific factors (e.g., renal or hepatic impairment), and ensure therapeutic drug levels while minimizing toxicity.	K/S/C	Small groups lab	MCQ
Prescription-order writing				
PHAR 4.1	Understand the Components and Legal Requirements of a Prescription. Learn about the essential components of a prescription (e.g., patient information, drug name, dosage, frequency, duration) and the legal requirements to ensure safe and accurate prescribing.	k/S/C	Small groups lab	MCQ

PHAR 4.2	Apply Proper Prescription Writing in Clinical Practice (Clinical Benefit) Write clear, accurate prescriptions that follow legal and clinical guidelines, considering factors like drug interactions, patient conditions, and cost- effectiveness to ensure patient safety and optimal therapeutic outcomes	K/S/C	Small groups lab	MCQ
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Drug-induced discoloration of urine				
PHAR 5.1	Understand the Mechanisms and Causes of Drug-Induced Urine Discoloration. Learn about the various drugs (e.g., rifampin, phenazopyridine, levodopa) that can cause changes in urine color, and understand the underlying pharmacological mechanisms behind these effects.	k/S/C	Small groups lab	MCQ
PHAR 5.2	Identify and Manage Drug-Induced Urine Discoloration in Clinical Practice (Clinical Benefit) Recognize the clinical significance of drug-induced urine discoloration, differentiate it from pathological causes, and provide patient education to alleviate concerns while managing the underlying condition or adjusting treatment if necessary.	K/S/C	Small groups lab	MCQ
Drug discovery and development; toxicity evaluation and clinical trials				
PHAR 6.1	Understand the Drug Discovery and Development Process Learn the stages of drug discovery and development, from preclinical research, lead compound identification, and optimization, to	K/S/C	Small groups lab	MCQ

	clinical trials and regulatory approval.			
PHAR 6.2	Apply Knowledge of Toxicity Evaluation and Clinical Trials in Drug Development (Clinical Benefit) Understand the importance of toxicity evaluation and preclinical studies to ensure drug safety, and learn how clinical trials are designed and conducted to assess drug efficacy and safety, ultimately benefiting patient care and regulatory compliance.	K/S/C	Small groups lab	MCQ

Pathology

Third Grade

Academic Program Description

This academic program description **summarizes** the course's most essential qualities and the learning objectives that the student is expected to attain, indicating whether he or she made advantage of all of the resources that are accessible. It includes a description of each course in the program of study.

1) Educational Establishment	University of AL-Ameed
2) Scientific Department	College of medicine
3) Name of the Professional Academic Program.	Modified Traditional Curriculum
4) Final Graduation Certificate	M.B.ChB
5) Educational system: Annual/courses/other	• Availability of relevant scientific research in the field of specialization • Access to global electronic networks • Access to traditional and digital libraries • Teaching aids such as data show and PowerPoint presentations • Availability of equipped classrooms • Use of free online communication platforms (e.g., Free Conference Call)
6) Approved accreditation program	Iraqi National Guideline on Standards for Established and Accrediting Medical School
7) Other external factors	Weather Conditions, National or Religious Holidays, Public Health Emergencies
8) Date the description was written	15\9\2024

9) Objectives of the academic program:

1. To provide students with an in-depth understanding of the pathological basis of diseases affecting the major body systems including respiratory, gastrointestinal, hepatobiliary, renal, endocrine, musculoskeletal, nervous, and reproductive systems.

2. To enable students to recognize and describe the gross and microscopic features of common pathological conditions within these systems.

3. To integrate systemic pathology knowledge with prior foundational concepts learned in general and cardiovascular pathology.

4. To enhance students' clinical reasoning by correlating pathological findings with signs, symptoms, and diagnostic tools.

5. To prepare students for clinical rotations by strengthening their diagnostic mindset and medical terminology through exposure to real-world case discussions.

6. To support the development of lifelong learning and ethical medical practice aligned with the mission of the College of Medicine at the University of Al-Ameed.

10. The most reliable resources for program information are:

Robbins basic pathology

Muris textbook of pathology

Rosai and Ackerman's Surgical Pathology

USMLE step1 lecture notes 2021: pathology

Pathology out lines .com

Pathology \ Grade 3

Code: PATH 303 5 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Introduction and cell injury				
PATH 1.1	By the end of this lecture, students will be able to define pathology, explain its goals, and differentiate between various branches of pathology with accurate examples	K	Large group lecture	MCQ & short answer Questions
PATH 1.2	Students will demonstrate the ability to match appropriate pathological techniques (e.g., light microscopy, immunohistochemistry) with relevant diagnostic applications during lab-based scenarios	K	Large group lecture	MCQ & short answer Questions
PATH 1.3	Given histopathological data, students will analyze patterns of reversible and irreversible cell injury, identifying key features such as cellular swelling and nuclear changes	K	Large group lecture	MCQ & short answer Questions
PATH 1.4	Students will evaluate multiple causes of cell injury—including hypoxia, toxins, and immune reactions—by comparing their pathophysiological mechanisms and clinical impact.	K	Large group lecture	MCQ & short answer Questions
PATH 1.5	Students will construct a complete summary table distinguishing between types of necrosis (e.g., coagulative, liquefactive, caseous), including morphology, causes, and affected tissues	K	Large group lecture	MCQ & short answer Questions
Cell injury				
PATH 2.1	By the end of this lecture, students will be able to describe the mechanisms and morphological features of apoptosis and explain how it differs from necrosis.	K	Large group lecture	MCQ & short answer Questions
PATH 2.2	Students will identify histological evidence of apoptosis, fatty change, and calcification in tissue sections using specific visual and cellular criteria	K	Large group lecture	MCQ & short answer Questions
PATH 2.3	Students will analyze the types of cellular adaptation—hypertrophy, hyperplasia, atrophy, and metaplasia—by comparing their causes, mechanisms, and examples.	K	Large group lecture	MCQ & short answer Questions
PATH 2.4	Students will evaluate the clinical significance of intracellular accumulations (e.g., lipofuscin, hemosiderin, bilirubin) in liver and cardiac pathology contexts.	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 2.5	Students will construct a concept map summarizing subcellular responses to injury (autophagy, mitochondrial changes, cytoskeletal abnormalities) and their pathological relevance	K	Large group lecture	MCQ & short answer Questions
Inflammation part I				
PATH 3.1	By the end of this lecture, students will be able to recall the key cardinal signs of inflammation and list at least four causes of acute inflammation.	K	Large group lecture	MCQ & short answer Questions
PATH 3.2	Students will be able to explain the stepwise vascular and cellular responses involved in acute inflammation, including changes in flow, permeability, and leukocyte migration.	K	Large group lecture	MCQ & short answer Questions
PATH 3.3	Given a case scenario, students will identify whether inflammation is acute or chronic based on clinical signs, cellular components, and histologic features.	K	Large group lecture	MCQ & short answer Questions
PATH 3.4	Students will analyze the phases of leukocyte recruitment and identify specific molecules involved in rolling, adhesion, and transmigration processes.	K	Large group lecture	MCQ & short answer Questions
PATH 3.5	Students will evaluate the roles of various chemical mediators (e.g., histamine, prostaglandins, cytokines) in modulating vascular reactions and leukocyte behavior in inflammation.	K	Large group lecture	MCQ & short answer Questions
Inflammation part II				
PATH 4.1	By the end of this lecture, students will be able to list four morphologic patterns of acute inflammation and describe at least one example of each.	K	Large group lecture	MCQ & short answer Questions
PATH 4.2	Students will explain the beneficial and harmful effects of acute inflammation, and summarize the three possible outcomes following an inflammatory episode.	K	Large group lecture	MCQ & short answer Questions
PATH 4.3	Given histological images, students will identify key cellular features that distinguish acute from chronic inflammation, such as the presence of mononuclear infiltrates and fibrosis.	K	Large group lecture	MCQ & short answer Questions
PATH 4.4	Students will analyze the roles of macrophages, lymphocytes, plasma cells, and eosinophils in chronic inflammation and describe how their interactions sustain the inflammatory process.	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 4.5	Students will evaluate the clinical relevance of chronic inflammation in diseases such as tuberculosis, atherosclerosis, and rheumatoid arthritis based on pathologic findings.	K	Large group lecture	MCQ & short answer Questions
Chronic inflammation and tissue repair				
PATH 5.1	By the end of this lecture, students will recall at least five diseases associated with granulomatous inflammation and define the term “granuloma” with its cellular composition.	K	Large group lecture	MCQ & short answer Questions
PATH 5.2	Students will explain the differences between foreign body and immune granulomas and describe the role of cytokines like IFN-γ and IL-2 in their formation.	K	Large group lecture	MCQ & short answer Questions
PATH 5.3	students will identify granulomas, differentiate caseating from non-caseating forms, and relate findings to diseases like TB or sarcoidosis.	K	Large group lecture	MCQ & short answer Questions
PATH 5.4	Students will analyze systemic effects of inflammation, such as fever, leukocytosis, and acute phase protein elevation, and explain their underlying cytokine-mediated mechanisms.	K	Large group lecture	MCQ & short answer Questions
PATH 5.5	Students will evaluate the differences between regeneration and scar formation in tissue repair, including conditions favoring primary vs. secondary intention healing.	K	Large group lecture	MCQ & short answer Questions
Hemodynamic disorders I				
PATH 6.1	By the end of this lecture, students will list the seven major hemodynamic disorders and recall the core definitions of hyperemia, congestion, edema, and thrombosis.	K	Large group lecture	MCQ & short answer Questions
PATH 6.2	Students will describe the mechanisms underlying edema formation and explain the differences between transudate and exudate in the context of fluid dynamics.	K	Large group lecture	MCQ & short answer Questions
PATH 6.3	Given clinical vignettes, students will distinguish between causes and morphologic findings of acute vs chronic pulmonary and hepatic congestion.	K	Large group lecture	MCQ & short answer Questions
PATH 6.4	Students will analyze Virchow’s triad and explain how endothelial injury, abnormal blood flow, and hypercoagulability contribute to thrombogenesis.	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 6.5	Students will evaluate the differences between arterial and venous thrombi, including morphology, clinical significance, and treatment approaches.	K	Large group lecture	MCQ & short answer Questions
Hemodynamic disorders 2				
PATH 7.1	By the end of this lecture, students will be able to define hemorrhage, embolism, infarction, and shock, and classify at least two subtypes or causes for each.	K	Large group lecture	MCQ & short answer Questions
PATH 7.2	Students will explain the differences between red and white infarcts, including underlying mechanisms and typical affected organs.	K	Large group lecture	MCQ & short answer Questions
PATH 7.3	Given clinical symptoms and images, students will identify the type of shock (e.g., cardiogenic, hypovolemic, septic) and suggest the most likely underlying cause.	K	Large group lecture	MCQ & short answer Questions
PATH 7.4	Students will analyze the pathophysiological cascade of septic shock, tracing the role of microbial products, cytokine release, and endothelial activation.	K	Large group lecture	MCQ & short answer Questions
PATH 7.5	Students will evaluate the factors that influence infarct development—such as rate of occlusion, vascular anatomy, and tissue susceptibility—and assess clinical implications.	K	Large group lecture	MCQ & short answer Questions
Genetic Disorders I				
PATH 8.1	By the end of this lecture, students will be able to list the major types of genetic mutations and define basic terms such as allele, genotype, phenotype, and locus.	K	Large group lecture	MCQ & short answer Questions
PATH 8.2	Students will explain the differences between autosomal dominant, autosomal recessive, and X-linked inheritance patterns with appropriate clinical examples.	K	Large group lecture	MCQ & short answer Questions
PATH 8.3	Students will classify selected genetic diseases such as Marfan syndrome, cystic fibrosis, and thalassemia according to their inheritance patterns and molecular mechanisms.	K	Large group lecture	MCQ & short answer Questions
PATH 8.4	Students will analyze the pathogenesis of diseases caused by frame-shift mutations, trinucleotide repeat expansions, and genomic imprinting effects.	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 8.5	Students will analyze the pathogenesis of diseases caused by frame-shift mutations, trinucleotide repeat expansions, and genomic imprinting effects.	K	Large group lecture	MCQ & short answer Questions
Genetic Disorders 2				
PATH 9.1	By the end of this lecture, students will list major chromosomal abnormalities (e.g., trisomies, deletions, inversions) and identify related syndromes such as Down, Turner, and Klinefelter.	K	Large group lecture	MCQ & short answer Questions
PATH 9.2	Students will explain the mechanisms of nondisjunction and anaphase lag and how they contribute to aneuploidy and mosaicism.	K	Large group lecture	MCQ & short answer Questions
PATH 9.3	students will classify the disorder and link it to the correct chromosomal change (e.g., 47,XXY → Klinefelter syndrome).	K	Large group lecture	MCQ & short answer Questions
PATH 9.4	Students will analyze differences between sex chromosome disorders and autosomal abnormalities, focusing on clinical features, inheritance patterns, and hormonal impact.	K	Large group lecture	MCQ & short answer Questions
PATH 9.5	Students will evaluate the impact of genomic imprinting disorders (e.g., Angelman vs Prader-Willi) based on parental origin, gene silencing, and clinical manifestations.	K	Large group lecture	MCQ & short answer Questions
Immunopathology I				
PATH 10.1	By the end of this lecture, students will be able to list the main components of innate and adaptive immunity and define the four types of hypersensitivity reactions.	K	Large group lecture	MCQ & short answer Questions
PATH 10.2	Students will explain the mechanisms of Type I–IV hypersensitivity reactions, including immune cells, mediators, and timelines involved in each type	K	Large group lecture	MCQ & short answer Questions
PATH 10.3	Given clinical case scenarios, students will identify the type of hypersensitivity reaction based on symptoms, timing, and laboratory findings.	K	Large group lecture	MCQ & short answer Questions
PATH 10.4	Students will analyze the pathogenesis and tissue responses in diseases like SLE, myasthenia gravis, and contact dermatitis, linking them to hypersensitivity types.	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 10.5	Students will evaluate the role of cytokines and immune mediators in both protective immunity and immune-mediated tissue damage.	K	Large group lecture	MCQ & short answer Questions
Immunopathology II				
PATH 11.1	By the end of this lecture, students will recall the classification of immune deficiencies and list examples of primary and secondary immunodeficiency syndromes.	K	Large group lecture	MCQ & short answer Questions
PATH 11.2	Students will explain the immunologic mechanisms involved in transplant rejection (hyperacute, acute, chronic, GVHD) and relate them to hypersensitivity types.	K	Large group lecture	MCQ & short answer Questions
PATH 11.3	Given a clinical case, students will identify the type of autoimmune disease (organ-specific vs systemic) and match it with the underlying immune response mechanism.	K	Large group lecture	MCQ & short answer Questions
PATH 11.4	Students will analyze the pathogenesis and immune features of AIDS-related neoplasms (Kaposi sarcoma, Non-Hodgkin lymphoma, cervical cancer) based on viral associations	K	Large group lecture	MCQ & short answer Questions
PATH 11.5	Students will evaluate histological techniques used in diagnosing amyloidosis, including Congo red staining and birefringence under polarized light.	K	Large group lecture	MCQ & short answer Questions
Neoplasia1				
PATH 12.1	By the end of this lecture, students will be able to list the major categories of tumors (benign, malignant, mixed) and correctly apply the terminology used in tumor classification.	K	Large group lecture	MCQ & short answer Questions
PATH 12.2	Students will describe the key histological and gross differences between benign and malignant neoplasms, including criteria such as differentiation, invasion, and metastasis	K	Large group lecture	MCQ & short answer Questions
PATH 12.3	Given clinical cases and microscopic slides, students will identify tumor types (e.g., adenoma vs. carcinoma) and assign appropriate benign or malignant classification	K	Large group lecture	MCQ & short answer Questions
PATH 12.4	Students will analyze tumor morphology including features like anaplasia, nuclear atypia, pleomorphism, and abnormal mitoses to differentiate grades of malignancy	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 12.5	Students will evaluate patterns of tumor spread—local invasion, lymphatic, hematogenous, and seeding—to predict potential behavior and prognosis	K	Large group lecture	MCQ & short answer Questions
Neoplasia2				
PATH 13.1	By the end of this lecture, students will be able to list major categories of carcinogenic agents, including chemical, physical, microbial, and viral causes of cancer	K	Large group lecture	MCQ & short answer Questions
PATH 13.2	Students will explain the roles of environmental factors (e.g., smoking, alcohol, infections) and inherited conditions in cancer development, using key examples like HPV, H. pylori, and aflatoxins.	K	Large group lecture	MCQ & short answer Questions
PATH 13.3	Given clinical scenarios, students will associate specific carcinogens with their corresponding cancers (e.g., EBV with Burkitt lymphoma, UV light with melanoma).	K	Large group lecture	MCQ & short answer Questions
PATH 13.4	Students will analyze the molecular pathways of carcinogenesis by identifying mutations in oncogenes (e.g., RAS, MYC), tumor suppressor genes, and genes regulating apoptosis or DNA repair	K	Large group lecture	MCQ & short answer Questions
PATH 13.5	Students will evaluate the impact of epigenetic alterations and tumor heterogeneity on cancer progression, prognosis, and response to therapy	K	Large group lecture	MCQ & short answer Questions
Neoplasia 3				
PATH 14.1	By the end of this lecture, students will list key tumor suppressor genes (e.g., RB, TP53, APC) and describe their normal roles in regulating cell cycle and apoptosis.	K	Large group lecture	MCQ & short answer Questions
PATH 14.2	Students will explain molecular mechanisms of cancer progression, including evasion of apoptosis, telomere maintenance, angiogenesis, invasion, and metastasis.	K	Large group lecture	MCQ & short answer Questions
PATH 14.3	Given tumor characteristics, students will apply TNM staging and tumor grading criteria to classify the neoplasm's clinical severity and treatment implication	K	Large group lecture	MCQ & short answer Questions
Neoplasia 4				
PATH 15.1	By the end of this lecture, students will be able to define cachexia, list common paraneoplastic syndromes, and identify examples of associated tumor types.	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 15.2	Students will describe the pathophysiologic mechanisms behind paraneoplastic endocrine syndromes and differentiate them from normal hormone-producing tumors.	K	Large group lecture	MCQ & short answer Questions
PATH 15.3	Students will match diagnostic biopsy techniques (FNA, core, endoscopic) to clinical scenarios, and determine their appropriate usage and limitations.	K	Large group lecture	MCQ & short answer Questions
PATH 15.4	Students will analyze diagnostic challenges using cytology, histochemistry, and immunohistochemistry in distinguishing poorly differentiated tumors.	K	Large group lecture	MCQ & short answer Questions
Environmental and Nutritional Diseases				
PATH 16.1	By the end of this lecture, students will list major environmental toxins (e.g., lead, mercury, CO), their sources, and outline associated clinical syndromes.	K	Large group lecture	MCQ & short answer Questions
PATH 16.2	Students will explain the systemic health effects of air pollution, tobacco, alcohol, and radiation, emphasizing their mechanisms of toxicity and disease outcomes.	K	Large group lecture	MCQ & short answer Questions
PATH 16.3	Given a clinical scenario, students will identify the most likely environmental or occupational exposure causing the patient's symptoms (e.g., anemia, neuropathy, fibrosis).	K	Large group lecture	MCQ & short answer Questions
PATH 16.4	Students will analyze the differences between marasmus and kwashiorkor based on pathophysiology, clinical signs, and laboratory features	K	Large group lecture	MCQ & short answer Questions
PATH 16.5	Students will evaluate the mechanisms and public health importance of vitamin deficiencies (A, D) and their systemic and disease-specific consequences.	K	Large group lecture	MCQ & short answer Questions
Cardiovascular System Pathology1				
PATH 17.1	By the end of this lecture, students will list major vascular pathologies such as atherosclerosis, aneurysms, arteriolosclerosis, and common types of vasculitis with key examples.	K	Large group lecture	MCQ & short answer Questions
PATH 17.2	Students will explain the pathogenesis, risk factors, and complications of atherosclerosis, including how it contributes to myocardial infarction and stroke	K	Large group lecture	MCQ & short answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 17.3	Given histological or clinical data, students will differentiate between types of arteriosclerosis (hyaline vs hyperplastic) and identify associated conditions like hypertension and diabetes.	K	Large group lecture	MCQ & short answer Questions
PATH 17.4	Students will analyze features distinguishing stable from vulnerable atherosclerotic plaques and assess their potential for rupture and thrombosis.	K	Large group lecture	MCQ & short answer Questions
PATH 17.5	Students will evaluate clinical presentations and imaging to differentiate between true and false aneurysms and between types of aortic dissection (type A vs type B).	K	Large group lecture	MCQ & short answer Questions
Cardiovascular System Pathology 2				
PATH 18.1	By the end of this lecture, students will list major venous disorders (e.g., varicose veins, thrombophlebitis), lymphatic conditions (e.g., lymphedema), and congenital heart defects (e.g., VSD, ASD, TOF).	K	Large group lecture	MCQ & short answer Questions
PATH 18.2	Students will explain the pathophysiology of left-sided and right-sided heart failure, including morphological and clinical consequences in lungs, liver, and peripheral tissues.	K	Large group lecture	MCQ & short answer Questions
PATH 18.3	Given clinical symptoms or gross pathology images, students will classify congenital heart defects based on shunt direction (L→R, R→L) and predict associated complications like cyanosis or pulmonary hypertension.	K	Large group lecture	MCQ & short answer Questions
PATH 18.4	Students will analyze differences between benign, intermediate, and malignant vascular tumors (e.g., hemangioma vs Kaposi sarcoma vs angiosarcoma) using histological and clinical criteria.	K	Large group lecture	MCQ & short answer Questions
PATH 18.5	Students will evaluate the risk factors and consequences of varicose veins, esophageal varices, and hemorrhoids in the context of venous stasis and portal hypertension.	K	Large group lecture	MCQ & short answer Questions

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Introduction to pathology				
PATH 1.1	A-Define the scope of pathology and its role in diagnosing disease through the examination of tissues, organs, and bodily fluids B- Identify the gross anatomical features of the stomach	K/S	Small group lecture	CIVA
PATH 1.2	A-Describe the tissue processing steps for histological examination B-Compare chemical fixation and frozen section techniques	K/S	Small group lecture	CIVA
Cell injury				
PATH 2.1	A-Differentiate between reversible and irreversible cell injury by identifying key microscopic changes. B-Compare the morphological features of necrosis and apoptosis C-Classify the five major types of necrosis	K	Small group lecture	CIVA
PATH 2.2	A-Describe the gross and microscopic progression of myocardial infarction, B-Recognize the pathologic hallmarks of gangrenous necrosis C-Explain the mechanisms and diagnostic features of fat necrosis	K	Small group lecture	CIVA
Cell injury				
PATH 3.1	A-Differentiate between apoptosis and necrosis B-Classify and describe the four major cellular adaptations C-Identify intracellular accumulations and their pathologic implications	K	Small group lecture	CIVA
PATH 3.2	A-Explain the mechanisms and consequences of pathologic calcification B-Correlate gross and microscopic findings in common diseases Liver steatosis Aortic stenosis Bronchial metaplasia C- Recognize the role of pigments in diagnosis	K	Small group lecture	CIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Inflammation				
PATH 4.1	A-Define acute and chronic inflammation B-Describe the vascular and cellular events in acute inflammation, C-Identify the cardinal signs of inflammation	K	Small group lecture	CIVA
PATH 4.2	A- Analyze acute appendicitis as a model of acute inflammation, focusing on: Gross findings, Microscopic features B-Differentiate suppurative vs. fibrinous exudates in acute inflammation C-Explain the transition to chronic inflammation	K	Small group lecture	CIVA
ACUTE INFLAMMATION				
PATH 5.1	A-Differentiate the morphologic patterns of acute inflammation B-Describe the gross and microscopic features of acute appendicitis, C-Explain the cellular and tissue changes in chronic inflammation,	K	Small group lecture	CIVA
PATH 5.1	A-Identify the role of immune cells in chronic inflammation B-Correlate chronic inflammation with systemic diseases, such as:	K	Small group lecture	CIVA
Chronic inflammation and tissue repair				
PATH 6.1	A-Define granulomatous inflammation and describe its key microscopic features B-Differentiate immune vs. foreign body granulomas by etiology and histology C-Explain the stages of tissue repair, comparing	K	Small group lecture	CIVA
PATH 6.2	A- Analyze acute appendicitis as a model of acute inflammation, focusing on: Gross findings, Microscopic features B-Differentiate suppurative vs. fibrinous exudates in acute inflammation C-Explain the transition to chronic inflammation	K	Small group lecture	CIVA
Hemodynamic disorders				
PATH 7.1	A-Differentiate between hyperemia (active) and congestion (passive), identifying Gross appearance, Microscopic features B-Describe the pathologic changes in chronic venous congestion C-Explain Virchow's triad and its role in thrombosis	K	Small group lecture	CIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 7.2	A-Identify thrombus vs. postmortem clot using: Lines of Zahn Gross/microscopic: B-Classify thrombi by location and associated diseases: C-Correlate edema types with underlying pathology	K	Small group lecture	CIVA
Hemodynamic disorders				
PATH 8.1	A-classify hemorrhagic manifestations based on their clinical and pathological features: B-Explain the pathogenesis and consequences of embolism, including: C-Differentiate red vs. white infarcts by etiology and morphology:	K	Small group lecture	CIVA
PATH 8.1	A-Describe the gross and microscopic features of common infarcts B-Identify the types and mechanisms of shock, correlating with clinical examples C-Recognize microvascular bleeding disorders (e.g., thrombocytopenia) by their pathologic signs	K	Small group lecture	CIVA
Genetics				
PATH 9.1	A-Interpret pedigree charts to identify inheritance patterns of genetic disorders: B-Describe chromosomal abnormalities and their nomenclature: -C-Recognize common genetic syndromes by karyotype and clinical features:	K	Small group lecture	CIVA
PATH 9.2	A-Explain meiotic errors leading to chromosomal disorders B-Differentiate types of structural chromosomal rearrangements: C-Apply karyotyping skills to diagnose genetic conditions:	K	Small group lecture	CIVA
Neoplasia				
PATH 10.1	-A-Differentiate between benign and malignant neoplasms based on: Gross features: Microscopic characteristics, B-Classify benign tumors by tissue origin and morphology: C-Identify malignant tumors by nomenclature and histologic patterns:	K	Small group lecture	CIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 10.2	- A-Describe the gross and microscopic features of common neoplasms: B-Explain the concept of teratomas and their pathologic features: C-Recognize key diagnostic criteria for malignancy	K	Small group lecture	CIVA
Neoplasia				
PATH 11.1	A-Differentiate between benign and malignant neoplasms based on: B-Classify tumors by degree of differentiation C- Identify microscopic features of malignancy	K	Small group lecture	CIVA
PATH 11.2	A-Describe gross and microscopic patterns of invasion: B-Explain the pathways of metastasis: -Correlate histologic grading with prognosis	K	Small group lecture	CIVA
Neoplasia				
PATH 12.1	A-Define tumor grading and staging, emphasizing their clinical significance: -B-Compare grading systems for common cancers: - C- Identify microscopic features used in grading	K	Small group lecture	CIVA
PATH 12.2	A-Describe the TNM staging system and its components: -B-Correlate histologic grade with prognosis and treatment: - C-Explain the clinical importance of stagin	K	Small group lecture	CIVA
LABORATORY.DIAGNOSIS OF CANCER				
PATH 13.1	A- Describe the methods of cancer sample collection, B-Explain the role of histochemistry and immunohistochemistry (IHC) in cancer diagnosis: C- Evaluate the utility of serum tumor markers in cancer management:	K	Small group lecture	CIVA
PATH 13.2	-A- Apply molecular diagnostic techniques for tumor analysis: B- Correlate diagnostic findings with therapeutic decisions:	K	Small group lecture	CIVA
Environmental and Nutritional Diseases				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PATH 14.1	A-Identify the pathologic effects of air pollution on the lungs - B-Describe the toxic effects of heavy metals -Compare protein-energy malnutrition (PEM) syndromes Marasmus: Kwashiorkor Cachexia:	K	Small group lecture	CIVA
PATH 14.2	A-Explain the pathology of vitamin deficiencies: -B-Recognize occupational diseases: C-Correlate hepatic steatosis with etiology Gross ،Microscopic	K	Small group lecture	CIVA
Cardiovascular System Pathology 1				
PATH 15.1	A-Compare normal arterial/venous histology -B-Identify the 3 vascular layers (tunica intima/media/adventitia) and their structural differences in arteries vs. veins, - C-Explain atherosclerosis pathogenesis -D-Analyze atherosclerotic plaque morphology	K	Small group lecture	CIVA
PATH 15.2	A-Differentiate aneurysm types - B-Correlate plaque complications -C-Identify vascular aging changes	K	Small group lecture	CIVA
Cardiovascular System Pathology 2				
PATH 16.1	-A-Differentiate hypertensive vascular changes in arterioles: -B-Classify vasculitides by vessel size and histopathology: - C-Identify microscopic features of vasculitis:	K	Small group lecture	CIVA
PATH 16.2	-A-Describe Buerger's disease (thromboangiitis obliterans): Gross, Microscopic - B-Explain Raynaud's phenomenon: -Correlate clinical and pathologic findings:	K	Small group lecture	CIVA

parasitology

Third Grade

Academic program discretion

This academic program description provides a brief overview of the key features of the program and the expected learning outcomes for the student, demonstrating whether the student has made the most of the available opportunities. It is accompanied by a description of each course within the program.

Educational Establishment	University of Al-Ameed
Scientific Department	College of Medicine
Name of the Professional Academic Program.	Modified traditional curriculum
Final Graduation Certificate	M.B.Ch.B
Educational system: Annual/courses/other	Annual
Approved accreditation program	Iraqi National Guidelines on Standards for Established and Accrediting Medical Schools
Other external factors	WHO
Date the description was written	2025/4/1

Objectives of the academic program:

Key Objectives of the PARSobiology Program for Third-Year Medical Students at Al-Ameed University College:

Understanding Parasitic Characteristics: Study the biological properties of various parasites, including protozoa, helminths, and ectoparasites, and their mechanisms of impact on the human body.

Immunology and Its Relation to Parasitology: Understand the interaction between parasites and the immune system, and how the body defends itself against parasitic infections.

Parasitic Infection Diagnosis: Learn the methods of diagnosing parasitic diseases through laboratory testing and clinical examination.

Treatment and Prevention of Parasitic Infections: Understand the appropriate treatment methods for parasitic infections, including antiparasitic medications, vaccines, and immunotherapy.

Environmental Impact on Parasites: Study the effect of environmental factors such as temperature, humidity, and sanitation on the growth and reproduction of parasites.

Ethical Aspects of Parasitological Research: Apply ethical principles in scientific and medical research, including the handling of biological samples and patient privacy.

Albassam text of medical mycology

Paniker's Textbook of Medical Parasitology

Mycology :

The Medical Mycology Handbook

Parasitology \ Grade 3

Code: PARS 304 5Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Classification of Medical Parasites and Morphology of Protozoa				
PARS 1	Identify and classify various medical protozoan parasites based on their morphological characteristics. Analyze the differences in structure and function among protozoal species. Compare the life cycles of different protozoa and their implications in disease transmission. Enhance the ability to identify protozoal parasites in clinical samples, aiding in accurate diagnosis. Support the development of differential diagnosis skills when encountering protozoal infections. Contribute to effective disease prevention strategies through a deeper understanding of protozoal morphology and lifecycle.	K	Large group lecture	MCQ & Short answer questions
Intestinal Protozoal Disease (Dysenteric Amoebiasis)				
PARS 2	Understand the pathophysiology of dysenteric amoebiasis and its clinical manifestations. Analyze laboratory diagnostic methods for detecting Entamoeba histolytica. Evaluate the therapeutic options for treating amoebiasis. Clinical Benefits: Improve diagnostic accuracy in identifying dysenteric amoebiasis in patients with gastrointestinal symptoms. Provide effective treatment strategies to reduce morbidity and prevent complications such as liver abscess. Enhance understanding of public health measures to control amoebiasis transmission.	K	Large group lecture	MCQ & Short answer questions
Intestinal Protozoal Disease (Giardiasis, Balantidiasis)				
PARS 3	Identify the causative agents of giardiasis and balantidiasis, understanding their lifecycle and transmission. Explore clinical symptoms and diagnostic methods for both diseases. Discuss treatment options and the prevention strategies for giardiasis and balantidiasis. Clinical Benefits: Aid in the differential diagnosis of gastrointestinal diseases, specifically in endemic areas.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Support effective treatment choices for parasitic intestinal infections, reducing patient discomfort and recovery time. Improve awareness of preventive measures, including hygiene and sanitation, to curb transmission.			
Urogenital Protozoal Disease (Trichomoniasis)				
PARS 4	Explain the lifecycle of Trichomonas vaginalis and its clinical significance. Identify diagnostic techniques for detecting trichomoniasis. Understand the pharmacological treatment and prevention of trichomoniasis. Clinical Benefits: Enhance diagnostic capabilities for urogenital infections, particularly in sexually active populations. Provide effective treatments to reduce complications like infertility and pelvic inflammatory disease. Promote awareness of sexually transmitted infections and preventive practices.	K	Large group lecture	MCQ & Short answer questions
Sporozoal Diseases (Toxoplasmosis)				
PARS 5	Understand the lifecycle and transmission of Toxoplasma gondii. Recognize the clinical manifestations of toxoplasmosis in both immunocompetent and immunocompromised individuals. Evaluate the diagnostic techniques and treatment protocols for toxoplasmosis. Clinical Benefits: Improve early detection and treatment in immunocompromised patients, particularly in HIV/AIDS and pregnant women. Minimize complications such as congenital defects and encephalitis through effective diagnosis and intervention. Support public health initiatives aimed at controlling zoonotic transmission from cats.	K	Large group lecture	MCQ & Short answer questions
Sporozoal Diseases (Malaria)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 6	Analyze the lifecycle of Plasmodium species and their role in malaria transmission. Recognize clinical symptoms and diagnostic methods for malaria. Discuss the latest treatment protocols and preventive measures for malaria. Clinical Benefits: Contribute to accurate diagnosis and timely treatment to reduce mortality and morbidity in malaria-endemic regions. Equip healthcare providers with knowledge of anti-malarial drugs and strategies for resistance management. Support malaria control programs by understanding environmental factors influencing transmission.	K	Large group lecture	MCQ & Short answer questions
Haemoflagellates (Leishmania)				
PARS 7	Understand the biology and lifecycle of Leishmania parasites. Identify clinical signs of cutaneous, mucocutaneous, and visceral leishmaniasis. Analyze diagnostic and treatment options for leishmaniasis. Clinical Benefits: Enhance diagnostic skills in identifying leishmaniasis, particularly in endemic areas. Provide appropriate treatment regimens to manage different forms of leishmaniasis and prevent complications. Support global health initiatives to control vector-borne diseases.	K	Large group lecture	MCQ & Short answer questions
Haemoflagellates (Trypanosomiasis)				
PARS 8	Study the lifecycle and pathogenicity of Trypanosoma species. Identify clinical signs and diagnostic methods for both African and American trypanosomiasis. Evaluate the available therapeutic treatments and challenges in managing trypanosomiasis. Clinical Benefits: Aid in diagnosing trypanosomiasis, especially in endemic regions, improving patient outcomes. Support effective treatment approaches to prevent disease progression and severe complications. Contribute to control programs targeting vector control and treatment access.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Medical Arthropods & Scabies / Myiasis				
PARS 9	Classify and identify various medical arthropods and their role in disease transmission. Understand the lifecycle and clinical presentation of scabies and myiasis. Evaluate treatment strategies and preventive measures for arthropod-borne diseases. Clinical Benefits: Enhance diagnostic skills in identifying arthropod-related infections, including scabies and myiasis. Provide effective treatment and control measures to reduce morbidity in affected individuals. Educate patients on prevention and hygiene practices to reduce arthropod-related diseases.	K	Large group lecture	MCQ & Short answer questions
General Medical Mycology				
PARS 10	Understand the classification and characteristics of medically significant fungi. Analyze the mechanisms of fungal pathogenesis and host interactions. Study the laboratory techniques used for diagnosing fungal infections. Clinical Benefits: Improve diagnostic accuracy for fungal infections, including skin, systemic, and opportunistic mycoses. Provide effective treatment regimens for fungal diseases, improving patient care. Enhance awareness of fungal infection risks, particularly in immunocompromised individuals.	K	Large group lecture	
Mycotic Diseases (Systemic Candidiasis)				
PARS 11	Understand the pathophysiology and clinical presentation of systemic candidiasis. Discuss diagnostic methods and treatment strategies for systemic Candida infections. Explore preventive measures for at-risk populations. Clinical Benefits: Improve diagnosis and management of systemic candidiasis, reducing morbidity in hospitalized and immunocompromised patients. Provide insights into antifungal therapy and resistance patterns. Support infection control measures in healthcare settings to prevent outbreaks.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Skin Mycosis (Superficial, Dermato, Subcutaneous Mycosis)				
PARS 12	Classify and describe the clinical manifestations of skin mycoses. Understand the diagnostic methods used to identify superficial, dermato, and subcutaneous fungal infections. Evaluate treatment options for managing various types of skin mycoses. Clinical Benefits: Enhance diagnosis and treatment of common dermatophyte infections, including athlete's foot and ringworm. Reduce the spread of fungal infections through proper treatment and preventive education. Improve patient care for chronic or resistant fungal infections.	K	Large group lecture	MCQ & Short answer questions
Pulmonary and Neuro Mycosis				
PARS 13	Analyze the pathogenesis of pulmonary and neuro mycoses caused by invasive fungi. Identify the diagnostic techniques used for detecting pulmonary and central nervous system fungal infections. Understand treatment options and the role of antifungal drugs in managing severe mycoses. Clinical Benefits: Aid in diagnosing and managing life-threatening pulmonary and neuro mycoses in immunocompromised patients. Promote early intervention to prevent complications such as fungal meningitis or respiratory failure. Contribute to improving patient outcomes in severe fungal infections.	K	Large group lecture	MCQ & Short answer questions
Mucor Mycosis				
PARS 14	Identify the causative agents of mucormycosis and their risk factors. Discuss the clinical features and diagnostic methods for mucormycosis. Understand treatment approaches, including surgical interventions and antifungal therapy. Clinical Benefits: Enhance diagnostic accuracy for mucormycosis, especially in diabetic or immunocompromised patients. Provide insights into aggressive management strategies, including early diagnosis and debridement.	K	Large group lecture	MCQ & Short answer questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Reduce morbidity and mortality in patients at risk for mucormycosis.			
Mycotoxicosis				
PARS 15	Understand the sources and types of mycotoxins produced by fungi. Analyze the clinical symptoms and effects of mycotoxin exposure. Discuss the preventive and treatment measures for mycotoxicosis. Clinical Benefits: Educate healthcare professionals on the risks of mycotoxicosis and its diagnostic features. Improve patient management by recognizing and addressing mycotoxin-related illnesses. Support public health initiatives to reduce mycotoxin exposure.	K	Large group lecture	MCQ & Short answer questions
Introduction to General Helminths				
PARS 16	Understand the general characteristics, classification, and lifecycle of helminths. Discuss the clinical significance of helminth infections in human health. Identify the major diagnostic methods used to detect helminth infections. Clinical Benefits: Improve diagnostic skills for helminth infections, especially in endemic regions. Support accurate and timely treatment decisions for helminth-related diseases. Enhance awareness of public health measures to control helminth infections.	K	Large group lecture	MCQ & Short answer questions
Classification of Medical Parasites and Morphology of Helminths				
PARS 17	Classify and describe the morphology of major helminths affecting human health. Compare and contrast the different types of helminths (nematodes, cestodes, trematodes). Analyze the impact of helminth infections on human health. Clinical Benefits: Enhance diagnostic accuracy in identifying helminths from clinical specimens. Provide guidance for treatment strategies based on the type and lifecycle of the helminth. Contribute to the development of better control measures for helminth infections.	K	Large group lecture	MCQ & Short answer questions
Intestinal Nematodes (Enterobiasis, Ascariasis)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 18	Identify the causative agents of enterobiasis and ascariasis and understand their lifecycle. Recognize the clinical features and diagnostic techniques for these infections. Discuss treatment options for intestinal nematode infections. Clinical Benefits: Improve the diagnosis and management of common parasitic infections in the gastrointestinal tract. Prevent complications such as malnutrition and intestinal obstruction. Provide public health strategies to control the transmission of intestinal nematodes.	K	Large group lecture	MCQ & Short answer questions
Intestinal Nematodes (Trichuriasis/Trichinosis)				
PARS 19	Identify the causative agents of trichuriasis and trichinosis, and describe their life cycle and clinical impact. Understand diagnostic methods and therapeutic approaches for these infections. Discuss the epidemiology and preventive measures for trichuriasis and trichinosis. Clinical Benefits: Enhance diagnosis and treatment of less common intestinal nematodes. Prevent complications such as rectal prolapse in trichuriasis and muscle damage in trichinosis. Raise awareness about preventive measures, including proper cooking practices.	K	Large group lecture	MCQ & Short answer questions
ntestinal Nematodes, Hookworm (Ancylostoma duodenale, Necator americanus)				
PARS 20	Describe the lifecycle of hookworms and their method of transmission. Understand the clinical manifestations of hookworm infections, including anemia and malnutrition. Analyze diagnostic methods and treatment options for hookworm infections. Clinical Benefits: Improve diagnostic accuracy for hookworm infections, particularly in endemic areas. Provide treatment options to address anemia and nutritional deficiencies caused by hookworm. Support health education programs focusing on prevention, particularly regarding soil-transmitted helminths	K	Large group lecture	MCQ & Short answer questions
Intestinal Nematodes (Strongyloidiasis, Trichostrongyliosis)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 21	Identify the causative agents of strongyloidiasis and trichostrongyliosis. Understand the clinical signs, symptoms, and diagnostic approaches for these infections. Discuss treatment regimens and prevention strategies for strongyloidiasis and trichostrongyliosis. Clinical Benefits: Enhance diagnosis of strongyloidiasis, particularly in immunocompromised patients. Prevent complications such as hyperinfection syndrome in strongyloidiasis. Promote public health strategies to control transmission in areas with poor sanitation.	K	Large group lecture	MCQ & Short answer questions
Blood and Tissue Nematodes (Filariasis, Trichinella spiralis, Wuchereria bancrofti)				
PARS 22	Understand the lifecycle and pathophysiology of filarial infections, including Wuchereria bancrofti. Identify clinical manifestations of filariasis, including lymphatic filariasis and elephantiasis. Discuss diagnostic methods and available treatments for filarial infections. Clinical Benefits: Improve the ability to diagnose and treat lymphatic filariasis, reducing morbidity from elephantiasis. Understand the epidemiology of filarial diseases and how to manage mass drug administration programs. Reduce complications in endemic areas through early diagnosis and effective treatment	K	Large group lecture	MCQ & Short answer questions
Blood and Tissue Nematodes, Onchocerca volvulus, Loa-Loa				
PARS 23	Describe the lifecycle and pathogenesis of Onchocerca volvulus and Loa loa. Recognize the clinical signs of onchocerciasis (river blindness) and loiasis. Discuss diagnostic techniques and treatment options for these infections. Clinical Benefits: Enhance early detection and treatment of onchocerciasis, preventing blindness. Provide effective treatment strategies to manage loiasis and reduce its long-term effects. Improve public health strategies in endemic areas to reduce vector transmission.	K	Large group lecture	MCQ & Short answer questions
Blood and Tissue Nematodes, Dracunculus medinensis				
PARS 24	Study the lifecycle of Dracunculus medinensis and its impact on human health.	K	Large group lecture	MCQ & Short

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Identify the clinical features of dracunculiasis (Guinea worm disease). Discuss current diagnostic techniques and eradication efforts for dracunculiasis. Clinical Benefits: Support eradication efforts for Guinea worm disease through early identification and case management. Promote preventive strategies such as water filtration to prevent transmission in endemic regions. Raise awareness about the global efforts to eliminate dracunculiasis.			answer questions
Intestinal Cestodes (Taeniasis)				
PARS 25	Identify the lifecycle of Taenia solium and Taenia saginata and understand the clinical impact of taeniasis. Discuss diagnostic methods for detecting taeniasis, including stool examination and serology. Explore treatment options for taeniasis and associated complications such as cysticercosis. Clinical Benefits: Improve diagnosis and management of taeniasis, reducing morbidity. Prevent complications such as neurocysticercosis, especially in regions where pork consumption is common. Support public health measures to reduce transmission through proper food handling and sanitation.	K	Large group lecture	MCQ & Short answer questions
Intestinal Cestodes (Hymenolepiasis, Diphylobothriasis)				
PARS 26	Understand the lifecycle and pathogenicity of Hymenolepis nana and Diphyllobothrium latum. Identify the clinical features and diagnostic techniques for these infections. Discuss the treatment options for both hymenolepiasis and diphyllobothriasis. Clinical Benefits: Enhance the ability to diagnose and treat hymenolepiasis and diphyllobothriasis. Reduce complications such as vitamin B12 deficiency in diphyllobothriasis. Promote improved diagnostic accuracy and treatment in regions with high prevalence.	K	Large group lecture	MCQ & Short answer questions
Tissue Cestodes (Echinococcosis, Hydatidosis)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 27	Analyze the lifecycle of Echinococcus granulosus and its clinical presentation. Discuss the diagnostic methods for hydatid disease and the role of imaging in diagnosis. Explore treatment options for hydatid cysts, including surgery and drug therapy. Clinical Benefits: Improve diagnosis and management of echinococcosis, reducing complications such as cyst rupture and secondary infections. Support preventive measures, including health education on animal hygiene and safe practices in endemic regions. Promote public health initiatives to control hydatid disease transmission.	K	Large group lecture	MCQ & Short answer questions
Trematodes, Blood Flukes (Schistosomiasis/Bilharziasis)				
PARS 28	Understand the lifecycle of Schistosoma species and their clinical manifestations. Recognize diagnostic methods for schistosomiasis, including serological tests and stool examination. Discuss the available treatments for schistosomiasis and its long-term effects on organ systems. Clinical Benefits: Improve diagnosis and treatment of schistosomiasis, particularly in endemic regions. Reduce morbidity associated with chronic schistosomiasis, such as liver fibrosis and bladder cancer. Enhance control strategies to reduce transmission, including snail control and mass drug administration.	K	Large group lecture	MCQ & Short answer questions
Trematodes, Liver Flukes (Fasciola hepatica), Intestinal Flukes (Fasciolopsis buski)				
PARS 29	Study the lifecycle and clinical impact of Fasciola hepatica and Fasciolopsis buski. Identify the clinical features of fascioliasis and fasciolopsiasis, including liver inflammation and intestinal obstruction. Discuss diagnostic techniques and treatment options for liver and intestinal flukes. Clinical Benefits: Improve diagnosis and treatment of fascioliasis and fasciolopsiasis in endemic regions. Prevent complications such as cholangitis and liver cirrhosis in fascioliasis. Promote public health education on avoiding contaminated water sources and snails	K	Large group lecture	MCQ & Short answer questions
Trematodes, Lung Flukes (Paragonimus westermani)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 30	Understand the lifecycle and pathogenesis of Paragonimus westermani. Recognize the clinical symptoms of pulmonary paragonimiasis and its diagnostic challenges. Discuss the available treatments and preventive measures for lung fluke infections. Clinical Benefits: Improve diagnosis and treatment of paragonimiasis, particularly in endemic regions. Prevent complications such as chronic respiratory symptoms and lung fibrosis. Raise awareness of parasitic lung infections, especially in individuals with exposure to raw or undercooked crustaceans.	K	Large group lecture	MCQ & Short answer questions

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Introduction - Parasitology				
PARS 1	Understand the fundamental concepts of parasitology and the significance of parasitic infections in human health. Identify different types of parasites and understand their life cycles. Apply the principles of parasitology to real-world clinical scenarios. Clinical Benefits: Recognize the importance of early diagnosis and management of parasitic infections. Develop a foundational understanding that aids in clinical decision-making when encountering parasitic diseases. Gain insights into the epidemiology of parasitic infections and their impact on public health.	K/S/C	Small group Lab	MCQ
Sterilization				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 2	Learn the different methods of sterilization used in PARSobiology and parasitology laboratories. Understand the principles behind physical and chemical sterilization techniques. Apply appropriate sterilization methods to prevent contamination in laboratory settings. Clinical Benefits: Ensure the safety and reliability of diagnostic tests through proper sterilization techniques. Minimize the risk of cross-contamination in clinical laboratories, which enhances diagnostic accuracy. Develop habits for maintaining aseptic techniques in clinical and research environments.	K/S/C	Small group Lab	MCQ
PARSoscopic examination / stool examination - Intestinal protozoa (Entamoeba histolytica, Giardia lamblia, Balantidium coli)				
PARS 3	Learn the PARSoscopic techniques for examining stool samples for intestinal protozoa. Identify and differentiate between the key intestinal protozoa based on their morphology. Understand the clinical significance of these protozoa and their diagnostic criteria. Clinical Benefits: Enhance diagnostic capabilities for detecting intestinal protozoal infections in patients. Understand the clinical manifestation and management of diseases caused by these protozoa. Develop skills in identifying common protozoal pathogens through laboratory methods.	K/S/C	Small group Lab	MCQ
Swab, laboratory diagnosis of vagina, oral, skin, (Trichomonas vaginalis)				
PARS 4	Learn how to collect and examine swab samples from different body sites for parasitic infections. Identify Trichomonas vaginalis in swab samples using PARSoscopic techniques. Understand the diagnostic criteria for detecting Trichomonas vaginalis in clinical settings. Clinical Benefits:	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Improve the accuracy of diagnosing Trichomonas vaginalis infections. Develop competence in handling and processing samples from various anatomical sites. Understand the clinical presentation and management of Trichomonas vaginalis infections.			
Blood, laboratory diagnosis of blood and examination for malaria, filaria				
PARS 5	Learn the techniques for blood sample collection and examination for blood-borne parasitic diseases. Understand how to identify Plasmodium spp. (malaria) and Wuchereria bancrofti (filariasis) under the PARSoscope. Interpret blood film results for the diagnosis of malaria and filaria. Clinical Benefits: Improve diagnostic skills for detecting malaria and filariasis in clinical settings. Understand the clinical implications of diagnosing malaria and filariasis early. Enhance decision-making skills regarding the treatment and management of these diseases.	K/S/C	Small group Lab	MCQ
CSF, laboratory diagnosis of CSF and examination				
PARS 6	Learn the process for collecting cerebrospinal fluid (CSF) and its examination for parasitic infections. Understand the clinical relevance of CSF examination in diagnosing central nervous system infections caused by parasites. Identify parasitic pathogens in CSF samples using appropriate diagnostic techniques. Clinical Benefits: Improve the ability to diagnose parasitic infections affecting the central nervous system, such as Toxoplasma gondii and Naegleria fowleri. Gain skills in performing lumbar punctures and handling CSF samples safely and effectively. Contribute to accurate diagnosis and early treatment of parasitic meningoencephalitis.	K/S/C	Small group Lab	MCQ
Introduction - Mycology				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 7	Understand the basic principles of medical mycology, including fungal classifications and their clinical significance. Learn the methods for collecting fungal specimens from clinical samples. Recognize the difference between superficial and systemic fungal infections. Clinical Benefits: Recognize the growing importance of fungal infections in immunocompromised patients. Understand the clinical implications of diagnosing and treating fungal diseases. Enhance diagnostic accuracy for fungal pathogens through proper specimen collection and examination techniques.	K/S/C	Small group Lab	MCQ
Scraping from skin, nail, and hair				
PARS 8	Learn the techniques for collecting skin, nail, and hair samples for fungal infections. Understand how to examine these samples PARSoscopically for fungal elements. Identify and differentiate fungal pathogens responsible for dermatophyte infections. Clinical Benefits: Gain proficiency in diagnosing dermatophyte infections, such as Tinea corporis and Tinea pedis. Understand the significance of proper sample collection to avoid misdiagnosis. Improve patient care by identifying fungal infections early for effective treatment.	K/S/C	Small group Lab	MCQ
Stain and solutions with Biopsy stain				
PARS 9	Learn the different types of stains and their application in fungal identification. Understand the importance of biopsy stains in diagnosing fungal infections. Apply various staining techniques to identify fungal structures in biopsy samples. Clinical Benefits: Enhance diagnostic accuracy for fungal infections through the use of specific staining techniques. Improve the ability to diagnose deep and invasive fungal infections. Contribute to the successful treatment of patients with fungal diseases by ensuring accurate diagnosis.	K/S/C	Small group Lab	MCQ
PARSoscopic examination for sputum, stool, urine, vaginal soap, CSF fluid, and hair				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PARS 10	Learn how to examine various clinical samples (sputum, stool, urine, CSF) for parasitic and fungal pathogens. Understand the PARSoscopic features of common parasites and fungi in different body fluids. Develop competency in identifying a broad range of parasitic and fungal pathogens in clinical specimens. Clinical Benefits: Enhance diagnostic skills for identifying parasitic and fungal infections across different anatomical sites. Improve understanding of how to interpret laboratory results and make accurate diagnoses. Contribute to effective treatment plans for patients with parasitic and fungal infections.	K/S/C	Small group Lab	MCQ
Culture and sensitivity for fungal diseases				
PARS 11	Learn the techniques for culturing fungal pathogens from clinical samples. Understand the principles of antiPARSobial sensitivity testing for fungal infections. Interpret culture results and susceptibility patterns to guide treatment decisions. Clinical Benefits: Improve diagnostic accuracy and treatment of fungal infections based on culture and sensitivity results. Understand how to manage antifungal therapy effectively, including resistance patterns. Enhance patient outcomes by using appropriate antifungal agents tailored to the infection.	K/S/C	Small group Lab	MCQ
Introduction / Intestinal nematodes				
PARS 12	Learn the classification and morphological characteristics of intestinal nematodes. Understand the life cycles and transmission methods of common intestinal nematodes. Identify key diagnostic features of intestinal nematodes. Clinical Benefits: Improve diagnostic skills for identifying intestinal nematode infections. Understand the clinical impact of intestinal nematodes on gastrointestinal health.	K/S/C	Small group Lab	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	Contribute to effective patient management by diagnosing intestinal nematode infections.			
Blood film				
PARS 13	Learn how to prepare and examine blood films for detecting parasitic infections. Identify blood-borne parasites using blood smear techniques. Understand the significance of blood film examination in diagnosing diseases like malaria and filariasis. Clinical Benefits: Enhance diagnostic capabilities for blood-borne parasitic infections, particularly malaria. Develop skills in blood smear preparation and parasite identification. Improve patient care by enabling early detection and treatment of blood-borne parasitic diseases.	K/S/C	Small group Lab	MCQ

Internal Medicine

Third Grade

Academic program discretion

This academic program description provides a brief overview of the key features of the program and the expected learning outcomes for the student, demonstrating whether the student has made the most of the available opportunities. It is accompanied by a description of each course within the program.

Educational Establishment	University of al-ameed
2-Scientific Department	College of medicine
3-Name of the Professional Academic Program.	Modified traditional curriculum
4-Final Graduation Certificate	M.B.Ch.B
5- Educational system: Annual/courses/other	Annual
6-Approved accreditation program	Applied for Iraqi National Guideline on Standards for Established and Accrediting Medical School
7-Other external factors	Availability of relevant scientific research in the field of specialization Access to global electronic networks Access to traditional and digital libraries Teaching aids such as data show and PowerPoint presentations Availability of equipped classrooms Use of free online communication platforms (e.g., Free Conference Call)
8-Date the description was written	2024/9/15
9- objectives of academic program	

To provide students with a strong foundational knowledge in internal medicine, focusing on the understanding of pathophysiology, clinical presentation, differential diagnosis, and management of common medical disorders encountered in adult patients.

To develop students' clinical reasoning and problem-solving skills, enabling them to perform accurate history taking, systematic physical examination, and formulation of appropriate diagnostic and management plans in inpatient and outpatient settings.

To train students in evidence-based medical practice, encouraging the integration of current clinical guidelines, scientific literature, and critical appraisal skills into patient care decisions across various internal medicine subspecialties (e.g., cardiology, pulmonology, gastroenterology, nephrology, endocrinology).

To enhance students' communication and professional skills, including empathy, ethical reasoning, and teamwork, especially when interacting with patients, families, and healthcare professionals in internal medicine wards and clinics.

To expose students to real-life clinical scenarios through bedside teaching, ward rounds, case-based discussions, and simulation exercises to prepare them for future clinical responsibilities.

To promote community awareness and preventive medicine, by educating students about chronic diseases such as hypertension, diabetes mellitus, and heart disease, and encouraging their participation in health campaigns and screening programs.

To cultivate a spirit of inquiry and clinical research, by encouraging students to participate in internal medicine research projects, case reports, and quality improvement initiatives relevant to local and national health needs.

10)The most reliabl resources for program information are:

Hutchison's clinical methods

Macleod's clinical examination

Systematic guide to physical diagnosis

Moby's guide to physical examination

The common symptom guide

Skills for communicating with patient

Davidson's principles and practice of medicine

Kumar and Clark's clinical medicine

Harrison's principles of internal medicine

Oxford textbook of medicine

Internal Medicine\ Grade 3	
Code: MEDI 305	5 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Cardiovascular System				
MEDI.1.1	Describe the anatomy and physiology of the cardiovascular system, including heart chambers and vessels.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.1.2	Perform a comprehensive cardiovascular examination.	S	Clinical skills lab, bedside teaching	OSCE
MEDI.1.3	Interpret common cardiovascular diagnostic tests (e.g., ECG, echocardiography).	C	Clinical skills lab, bedside teaching	CIVA
MEDI.1.4	Demonstrate empathy and professionalism when communicating with patients about cardiovascular health.	A	Clinical skills lab, bedside teaching	OSCE
Respiratory System				
MEDI.2.1	Explain the structure and function of the respiratory system, including gas exchange mechanisms.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.2.2	Conduct a thorough respiratory examination, including inspection, palpation, percussion, and auscultation.	S	Clinical skills lab	OSCE
MEDI.2.3	Analyze pulmonary function tests and imaging to diagnose respiratory conditions.	C	Clinical skills lab	CIVA
MEDI.2.4	Educate patients on smoking cessation and respiratory health maintenance.	A	Large group lecture	OSCE
Gastrointestinal System				
MEDI.3.1	Describe the anatomy and physiology of the gastrointestinal tract and accessory organs.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.3.2	Perform abdominal examinations to assess gastrointestinal health.	S	Clinical skills lab, bedside teaching	OSCE
MEDI.3.3	Interpret laboratory and imaging studies related to gastrointestinal disorders.	C	Case-based learning, problem-solving sessions	CIVA
MEDI.3.4	Counsel patients on dietary modifications for gastrointestinal health.	A	Clinical skills lab, bedside teaching	OSCE
Urinary System				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.4.1	Explain the structure and function of the urinary system, including nephron physiology.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.4.2	Conduct physical examinations focusing on the urinary system.	S	Clinical skills lab	OSCE
MEDI.4.3	Analyze urinalysis and imaging results to diagnose urinary disorders.	C	Large group lecture	CIVA
MEDI.4.4	Discuss preventive measures for urinary tract infections with patients.	A	Large group lecture	OSCE,
Endocrine System				
MEDI.5.1	Describe the hormonal regulation and feedback mechanisms of the endocrine system.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.5.2	Perform clinical assessments for endocrine disorders (e.g., thyroid examination).	S	Clinical skills lab, bedside teaching	OSCE
MEDI.5.3	Interpret laboratory tests for endocrine function (e.g., blood glucose, hormone levels).	C	Large group lecture	CIVA
MEDI.5.4	Address lifestyle modifications with patients managing endocrine disorders.	A	Large group lecture	OSCE
Immunity & Immune Deficiency				
MEDI.6.1	Explain the components and functions of the immune system, including innate and adaptive immunity.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.6.2	Identify clinical signs of immune deficiencies through patient history and examination.	S	Clinical skills lab, case simulations	OSCE
MEDI.6.3	Develop management plans for patients with immune deficiencies.	C	Large group lecture	CIVA
MEDI.6.4	Educate patients on infection prevention strategies.	A	Large group lecture	OSCE
Body Weight Disorders				
MEDI.7.1	Define various body weight disorders, including underweight and overweight classifications.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.7.2	Assess nutritional status and body composition in patients.	S	Clinical skills lab	OSCE
MEDI.7.3	Formulate individualized management plans for patients with body weight disorders.	C	Large group lecture	CIVA
MEDI.7.4	Address psychosocial aspects related to body weight with sensitivity.	A	Large group lecture	OSCE
Obesity and Appetite				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.8.1	Explain the physiological and psychological factors influencing appetite and obesity.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.8.2	Evaluate patients for obesity-related health risks.	S	Clinical skills lab	OSCE
MEDI.8.3	Develop comprehensive weight management plans, including lifestyle interventions.	C	Large group lecture	CIVA
MEDI.8.4	Counsel patients on sustainable dietary and physical activity changes.	A	Large group lecture	OSCE
Disorders of Nutrition				
MEDI.9.1	Identify common nutritional disorders and their clinical manifestations.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.9.2	Perform nutritional assessments, including dietary history and physical examination.	S	Clinical skills lab	OSCE
MEDI.9.3	Create nutrition care plans tailored to individual patient needs.	C	Large group lecture	CIVA
MEDI.9.4	Promote healthy eating habits through patient education.	A	Large group lecture	OSCE
Vitamin Disorders				
MEDI.10.1	Describe the role of essential vitamins and the consequences of their deficiencies or excesses.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.10.2	Recognize clinical signs of vitamin deficiencies through patient assessment.	S	Clinical skills lab	OSCE
MEDI.10.3	Develop treatment plans for correcting vitamin imbalances.	C	Large group lecture	CIVA
MEDI.10.4	Educate patients on dietary sources of essential vitamins.	A	Large group lecture	OSCE
History Taking				
MEDI.11.1	Understand the components of a comprehensive medical history.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.11.2	Elicit accurate and relevant information from patients during history taking.	S	Large group lecture	OSCE
MEDI.11.3	Integrate patient history into clinical reasoning and decision-making.	C	Large group lecture	CIVA
MEDI.11.4	Demonstrate active listening and empathy during patient interviews.	A	Large group lecture	OSCE
General Examination				
MEDI.12.1	Define the components of general examination and list the steps systematically.	K	Lectures, clinical skill lab	MCQs, Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.12.2	Demonstrate correct techniques in general physical examination on simulated patients.	S	Bedside teaching, clinical skill lab	OSCE
MEDI.12.3	Interpret abnormal general findings (e.g., pallor, cyanosis, lymphadenopathy) in relation to common diseases.	C	Case-based discussions, bedside teaching	CIVA, OSCE
MEDI.12.4	Show professionalism and respectful communication when examining patients.	A	Role-playing, bedside teaching	OSCE
Behavioral Sciences: Communication Skills				
MEDI.13.1	Describe the principles of effective communication in clinical settings.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.13.2	Demonstrate active listening and empathy during patient interactions.	S	Large group lecture	OSCE
MEDI.13.3	Apply communication strategies to convey complex medical information clearly.	C	Large group lecture	CIVA
MEDI.13.4	Reflect on personal communication styles and their impact on patient care.	A	Large group lecture	MCQs, Short Answer Questions
Behavioral Sciences: Learning				
MEDI.14.1	Explain various learning theories and their applications in medical education.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.14.2	Identify personal learning styles and strategies for effective study.	S	Large group lecture	MCQs, Short Answer Questions
MEDI.14.3	Develop a personalized learning plan incorporating evidence-based strategy.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.14.4	Demonstrate a commitment to lifelong learning and continuous professional development.	A	Large group lecture	MCQs, Short Answer Questions
Behavioral Sciences: Memory				
MEDI.15.1	Describe the types of memory and their roles in learning and clinical practice.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.15.2	Apply memory enhancement techniques to improve information retention.	S	Large group lecture	MCQs, Short Answer Questions
MEDI.15.3	Analyze factors affecting memory performance in clinical settings.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.15.4	Reflect on personal memory strengths and areas for improvement.	A	Large group lecture	MCQs, Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Behavioral Sciences: Perception				
MEDI.16.1	Explain the processes involved in human perception and their relevance to clinical practice.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.16.2	Identify perceptual biases and their potential impact on clinical decision-making.	S	Large group lecture	OSCE
MEDI.16.3	Evaluate the role of perception in patient-provider interactions.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.16.4	Demonstrate awareness of personal perceptual biases and strategies to mitigate them.	A	Large group lecture	MCQs, Short Answer Questions
Behavioral Sciences: Emotion and thinking				
MEDI.17.1	Describe the interplay between emotion and cognitive processes in clinical settings.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.17.2	Apply emotional regulation strategies during patient care.	S	Large group lecture	OSCE
MEDI.17.3	Analyze how emotions influence clinical reasoning and decision-making.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.17.4	Demonstrate empathy and emotional intelligence in patient interactions.	A	Large group lecture	OSCE
Behavioral Sciences: Sick Role				
MEDI.18.1	Explain Talcott Parsons' concept of the sick role and its implications in healthcare.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.18.2	Identify the rights and obligations associated with the sick role in various cultural contexts.	S	Large group lecture	OSCE
MEDI.18.3	Analyze the impact of the sick role on patient behavior and healthcare delivery.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.18.4	Demonstrate sensitivity to patients' experiences and societal expectations related to illness.	A	Large group lecture	MCQs, Short Answer Questions
Behavioral Sciences: Aggression				
MEDI.19.1	Describe the psychological and physiological factors contributing to aggressive behavior in patients.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.19.2	Apply de-escalation techniques effectively in simulated clinical scenarios involving aggressive patients.	S	Large group lecture	OSCE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.19.3	Evaluate the effectiveness of different aggression management strategies in healthcare settings.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.19.4	Exhibit self-awareness and control over personal responses when confronted with aggression in clinical environments.	A	Large group lecture	MCQs, Short Answer Questions
Behavioral Sciences: Communication Skills, Patient Safety, and Medical Ethics				
MEDI.20.1	Integrate effective communication strategies to enhance patient safety and uphold medical ethics.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.20.2	Demonstrate the ability to communicate adverse events and medical errors transparently and empathetically.	S	Large group lecture	OSCE
MEDI.20.3	Analyze ethical dilemmas in clinical practice and apply ethical decision-making frameworks.	C	Large group lecture	MCQs, Short Answer Questions
MEDI.20.4	Reflect on personal values and their influence on ethical clinical practice and patient safety.	A	Large group lecture	MCQs, Short Answer Questions
Fever and Pyrexia of Unknown Origin (PUO)				
MEDI.21.1	Define PUO and list its common etiologies, including infections, malignancies, and autoimmune disorders.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.21.2	Perform a systematic clinical evaluation to identify potential causes of PUO.	S	Large group lecture	OSCE, CIVA
MEDI.21.3	Interpret diagnostic tests to differentiate between various causes of PUO.	C	Large group lecture	CIVA
MEDI.21.4	Demonstrate empathy and effective communication when managing patients with PUO.	A	Large group lecture	OSCE
Viral Diseases: Herpes Family				
MEDI.22.1	Describe the virology, transmission, and clinical manifestations of Herpesviridae infections.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.22.2	Identify and diagnose common herpesvirus infections based on clinical features and laboratory findings.	S	Large group lecture	OSCE, CIVA
MEDI.22.3	Develop management plans for patients with herpesvirus infections, considering antiviral therapies.	C	Large group lecture	CIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.22.4	Counsel patients on prevention strategies and address psychosocial aspects of herpesvirus infections.	A	Large group lecture	OSCE
Viral Diseases: Herpes Family and Vaccine-Preventable Diseases				
MEDI.23.1	List vaccine-preventable diseases within the Herpesviridae family and their respective vaccines.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.24.2	Administer vaccines appropriately and manage potential adverse reactions.	S	Large group lecture	OSCE, CIVA
MEDI.24.3	Evaluate vaccination schedules and implement immunization programs effectively.	C	Large group lecture	CIVA
MEDI.24.4	Advocate for vaccination and address vaccine hesitancy in diverse populations.	A	Large group lecture	OSCE
Viral Diseases: Influenza and COVID-19				
MEDI.25.1	Compare the pathophysiology, transmission, and clinical features of influenza and COVID-19.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.25.2	Conduct appropriate testing and interpret results for respiratory viral infections.	S	Large group lecture	OSCE, CIVA
MEDI.25.3	Formulate management plans for patients with influenza or COVID-19, including antiviral use and isolation protocols.	C	Large group lecture	CIVA
MEDI.25.4	Communicate public health measures and educate patients on prevention strategies for respiratory viruses.	A	Large group lecture	OSCE
Viral Diseases: HIV				
MEDI.26.1	Explain the virology, transmission routes, and stages of HIV infection.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.26.2	Perform HIV testing and counseling in accordance with current guidelines.	S	Large group lecture	OSCE, CIVA
MEDI.26.3	Develop comprehensive care plans for individuals living with HIV, including antiretroviral therapy management.	C	Large group lecture	CIVA
MEDI.26.4	Address stigma and ethical considerations in the care of patients with HIV.	A	Large group lecture	OSCE
Bacterial Diseases: Gram-Positive				
MEDI.27.1	Identify common gram-positive bacteria and the diseases they cause.	K	Large group lecture	MCQs, Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.27.2	Perform and interpret gram staining and culture techniques for gram-positive organisms.	S	Large group lecture	OSCE
MEDI.27.3	Choose appropriate antibiotic therapies for gram-positive bacterial infections.	C	Large group lecture	CIVA
MEDI.27.4	Promote infection control practices to prevent the spread of gram-positive bacteria.	A	Large group lecture	OSCE
Bacterial Diseases: Gram-Negative				
MEDI.28.1	Describe the characteristics and pathogenic mechanisms of gram-negative bacteria.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.28.2	Identify gram-negative organisms using laboratory diagnostic techniques.	S	Large group lecture	OSCE
MEDI.28.3	Develop treatment plans for infections caused by gram-negative bacteria, considering resistance patterns.	C	Large group lecture	CIVA
MEDI.28.4	Advocate for prudent antibiotic use to combat antimicrobial resistance.	A	Large group lecture	OSCE
Bacterial Diseases: Anaerobic				
MEDI.29.1	Explain the growth requirements and pathogenicity of anaerobic bacteria.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.29.2	Collect and process clinical specimens appropriately for anaerobic culture.	S	Large group lecture	OSCE
MEDI.29.3	Manage infections caused by anaerobic bacteria, including appropriate antimicrobial therapy.	C	Large group lecture	CIVA
MEDI.29.4	Emphasize the importance of timely diagnosis and treatment of anaerobic infections to prevent complications.	A	Large group lecture	OSCE
Bacterial Diseases: Tuberculosis (TB)				
MEDI.30.1	Describe the epidemiology, transmission, and pathogenesis of TB.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.30.2	Perform and interpret diagnostic tests for TB, including skin tests and imaging.	S	Clinical skill labs	OSCE, CIVA
MEDI.30.3	Develop treatment regimens for latent and active TB, considering drug resistance.	C	Large group lecture	CIVA
MEDI.30.4	Address public health strategies for TB control and prevention.	A	Large group lecture	OSCE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Parasitic Infestations				
MEDI.31.1	Identify common human parasites and their life cycles.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.31.2	Diagnose parasitic infections using appropriate laboratory techniques.	S	Large group lecture	OSCE
MEDI.31.3	Formulate treatment plans for various parasitic infections.	C	Large group lecture	CIVA
MEDI.31.4	Educate patients and communities on prevention and control of parasitic diseases.	A	Large group lecture	OSCE
Helminthic Infestations				
MEDI.32.1	Describe the classification, morphology, and life cycles of medically important helminths (e.g., nematodes, cestodes, trematodes).	K	Large group lecture	MCQs, Short Answer Questions
MEDI.32.2	Perform diagnostic procedures for helminthic infections, including stool examination and serological tests.	S	Large group lecture	OSCE
MEDI.32.3	Develop treatment plans for helminthic infections, considering drug choices and resistance patterns.	C	Large group lecture	CIVA
MEDI.32.4	Educate patients and communities on prevention and control measures for helminthic infections.	A	Large group lecture	OSCE
Fungal Infections				
MEDI.33.1	Identify common fungal pathogens and the diseases they cause, including superficial and systemic mycoses.	K	Large group lecture	MCQs, Short Answer Questions
MEDI.33.2	Perform and interpret laboratory tests for fungal infections, such as KOH preparation and fungal cultures.	S	Large group lecture	OSCE
MEDI.33.3	Formulate management strategies for various fungal infections, considering antifungal therapies and patient factors.	C	Large group lecture	CIVA
MEDI.33.4	Counsel patients on adherence to antifungal treatments and preventive measures to avoid recurrence.	A	Large group lecture	OSCE

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Week 1: History Taking				
MEDI.1.1	Describe the essential components of a comprehensive medical history, including chief complaint, HPI, PMH.	K	Bedside teaching, Clinical skill lab	CIVA, OSCE, OSLER
MEDI.1.2	Demonstrate effective communication skills while obtaining a patient's history in a clinical setting.	S	Bedside teaching, Clinical skill lab	OSCE, OSLER
MEDI.1.3	Analyze patient information to formulate a relevant differential diagnosis based on history alone.	C	Bedside teaching, Clinical skill lab	CIVA, OSCE
MEDI.1.4	Show professionalism and empathy during patient interviews, respecting confidentiality and cultural values.	A	Bedside teaching, Clinical skill lab	OSLER, OSCE
Week 2: General Examination				
MEDI.2.1	Describe the steps and techniques of a systematic general physical examination.	K	Bedside teaching, Clinical skill lab	CIVA, OSCE, OSLER
MEDI.2.2	Perform a complete general examination including assessment of consciousness, posture, gait, and vital signs.	S	Bedside teaching, Clinical skill lab	OSCE, OSLER
MEDI.2.3	Differentiate between normal and abnormal general physical signs and relate them to common clinical conditions.	C	Bedside teaching, Clinical skill lab	CIVA, OSCE
MEDI.2.4	Display a professional attitude, maintain patient dignity, and ensure effective communication during the exam.	A	Bedside teaching, Clinical skill lab	OSCE, OSLER
Week 3: Communication Skills				
MEDI.3.1	Identify the key elements of effective verbal and non-verbal communication in a healthcare setting.	K	Bedside teaching, Clinical skill lab	CIVA, OSCE, OSLER

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.3.2	Explain the importance of active listening and empathy in building rapport with patients.	S	Bedside teaching, Clinical skill lab	OSCE, OSLER
MEDI.3.3	Demonstrate the ability to ask open-ended questions to gather comprehensive patient information.	C	Bedside teaching, Clinical skill lab	CIVA, OSCE
MEDI.3.4	Differentiate between appropriate and inappropriate communication techniques in various patient scenarios (e.g., delivering difficult news, communicating with anxious patients).	A	Bedside teaching, Clinical skill lab	OSLER, OSCE
Week 4: Vital Signs				
MEDI.4.1	Describe the normal ranges of temperature, pulse, respiration, and blood pressure.	K	Bedside teaching, Clinical skill lab	CIVA, OSCE, OSLER
MEDI.4.2	Accurately measure and record a patient's vital signs using standard techniques.	S	Bedside teaching, Clinical skill lab	OSCE, OSLER
MEDI.4.3	Interpret abnormal vital signs and correlate with potential clinical conditions.	C	Bedside teaching, Clinical skill lab	CIVA, OSCE
MEDI.4.4	Demonstrate respect and reassurance to patients during the measurement process.	A	Bedside teaching, Clinical skill lab	OSLER, OSCE
Week 5: Review of History Taking				
MEDI.5.1	Recall the structure of a complete medical history, including chief complaint and history of present illness.	k	Bedside teaching, Clinical skill lab	OSLER, OSCE, CIVA
MEDI.5.2	Elicit a focused and relevant medical history in a logical and patient-centered manner.	k	Bedside teaching, Clinical skill lab	OSCE, CIVA
MEDI.5.3	Identify inconsistencies or red flags in a patient’s history.	C	Bedside teaching	OSLER, CIVA
MEDI.5.4	Show empathy and professionalism while reviewing sensitive aspects of history.	A	Bedside teaching	OSCE
Week 6: General Examination Related to CVS (Cardiovascular System)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.6.1	List the key signs and symptoms of common cardiovascular diseases (e.g., heart failure, valvular disease).	K	Bedside teaching	CIVA
MEDI.6.2	Perform a general physical exam to identify signs of cardiovascular dysfunction (e.g., cyanosis, edema).	S	Clinical skill lab	OSCE, OSLER
MEDI.6.3	Correlate general physical findings with specific cardiovascular pathologies.	C	Bedside teaching	CIVA
MEDI.6.4	Maintain patient dignity and explain the procedure clearly during the examination.	A	Bedside teaching	OSCE
Week 7: General Examination Related to Respiratory System				
MEDI.7.1	Describe common respiratory signs seen on general examination (e.g., dyspnea, cyanosis).	K	Clinical skill lab	CIVA
MEDI.7.2	Perform general observations relevant to respiratory illness (e.g., respiratory rate, accessory muscle use).	S	Bedside teaching	OSCE
MEDI.7.3	Interpret general signs in the context of underlying respiratory diseases like COPD or pneumonia.	C	Bedside teaching	OSLER, CIVA
MEDI.7.4	Ensure patient comfort and communicate findings with clarity and care.	A	Bedside teaching	OSCE
Week 8: General Examination Related to GIT				
MEDI.8.1	Describe the normal inspection findings of the abdomen and key anatomical landmarks.	K	Bedside teaching, clinical skill lab	OSCE, CIVA
MEDI.8.2	Perform a full abdominal examination, including inspection, palpation, percussion, and auscultation.	S	Bedside teaching, clinical skill lab	OSCE, OSPE
MEDI.8.3	Analyze abnormal abdominal signs (e.g., tenderness, guarding, shifting dullness) and relate them to common GIT conditions such as ascites, appendicitis, or hepatomegaly.	C	Bedside teaching, clinical skill lab	CIVA, OSCE
MEDI.8.4	Demonstrate professional behavior and appropriate communication while examining a patient with abdominal complaints.	A	Bedside teaching, clinical skill lab	OSCE
Week 9: Pulmonary Function Test				
MEDI.9.1	Describe the principles of pulmonary function testing and the significance	K	Work shop	OSCE, CIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	of key measurements (e.g., FVC, FEV1).			
MEDI.9.2	Perform spirometry correctly, ensuring proper patient instruction and reproducibility of results.	S		OSPE, OSCE
MEDI.9.3	Interpret basic PFT results and differentiate between obstructive and restrictive lung diseases.	C		CIVA, OSCE
MEDI.9.4	Communicate findings to patients in a clear, empathetic manner, especially in chronic disease follow-ups.	A		OSCE
Week 10: Surface Anatomy				
MEDI.10.1	Describe the principles and steps of Basic Life Support (BLS) including indications for CPR and AED.	K	Clinical skill lab, bedside teaching	CIVA, OSCE
MEDI.10.2	Demonstrate correct technique for performing high-quality CPR on adult and pediatric mannequins.	S	Clinical skill lab	OSPE, OSCE
MEDI.10.3	Apply the steps of using an Automated External Defibrillator (AED) in a simulated emergency scenario.	C	Clinical skill lab	OSCE, CIVA
MEDI.10.4	Show calm, effective communication and teamwork during resuscitation drills.	A	Clinical skill lab	OSCE
Week 11: ECG				
MEDI.11.1	Describe the components of a normal ECG trace and the physiological basis of each wave and interval.	K	Clinical skill lab, bedside teaching	CIVA, OSCE
MEDI.11.2	Perform correct placement of ECG leads and record a 12-lead ECG accurately.	S	Clinical skill lab	OSPE, OSCE
MEDI.11.3	Interpret common ECG abnormalities such as myocardial infarction, arrhythmias, and electrolyte imbalance.	C	Clinical skill lab	OSCE, CIVA
MEDI.11.4	Demonstrate professional communication when explaining ECG findings to patients or colleagues.	A	Clinical skill lab	OSCE
Week12: CPR and AED				
MEDI.12.1	Describe the basic steps of CPR and the indications for using an AED in adult and pediatric patients.	K	Bedside teaching, clinical skill lab	CIVA, OSCE
MEDI.12.2	Demonstrate proper technique for chest compressions, rescue breathing, and AED application.	S	Bedside teaching, clinical skill lab	OSCE, OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
MEDI.12.3	Analyze different emergency scenarios and decide when and how to initiate CPR and apply AED.	C	Bedside teaching, clinical skill lab	OSCE, CIVA
MEDI.12.4	Show teamwork, composure, and effective communication during simulated cardiac arrest situations.	A	Bedside teaching, clinical skill lab	OSCE

Surgery

Third Grade

Academic program discretion

This academic program description summarizes the course's most essential qualities and the learning objectives that the student is expected to attain, indicating whether he or she made advantage of all of the resources that are accessible.

Educational Establishment	University of Al-Ameed
Scientific Department	Surgical department
Name of the Professional Academic Program.	Modified traditional curriculum
Final Graduation Certificate	M.B.Ch.B
Educational system. Annual/courses/other	Annual
Approved accreditation program	Approved accreditation program Iraqi National Guideline on Standards for Established and Accrediting Medical School
Other external factors	Availability of relevant scientific research in the field of specialization Access to global electronic networks Access to traditional and digital libraries Teaching aids such as data show and PowerPoint presentations Availability of equipped classrooms Use of free online communication platforms (e.g., Free Conference Call
Date the description was written	1/4/2025

Academic program objective

1- Graduate doctors with a strong foundation in surgery, enabling them to understand, diagnose, and treat surgical cases in emergency departments, surgical wards, and outpatient clinics. Strengthen students' clinical skills through theoretical and practical discussions, clinical patient examinations in hospitals, and hands-on training in skills laboratories. Additionally, conduct surgical workshops at the college to discuss surgical cases and explore their management.

2- Provide training and skills to practice surgery safely by diagnosing and treating common and urgent surgical cases, as well as managing trauma and emergency situations.

3- Integrate modern educational techniques and advanced technology into teaching methods and surgical programs, while utilizing information and communication technologies to share knowledge, conduct research, and develop surgical curricula.

4- Promote cultural exchange and establish bilateral partnerships with medical schools and professional surgical organizations at the Arab and international levels to expand academic and scientific collaboration in the field of surgery.

5- Strengthen collaboration between the college and the community by organizing seminars, conferences, and workshops that address national surgical and health issues.

6- Support the preparation of future leaders in the field of surgery, empowering them to achieve excellence and leadership in their medical specialties.

7- Regarding health understand global health and public health strategies related to surgical care access, safe surgery initiatives, and trauma system development.

8- Discussing the importance of patient education Explain the importance of early screening programs and understand the role of lifestyle modification ,Identify risk factors

Promote trauma prevention.

The most reliable resources for program information are:

Bailey and love

Short practice of surgery

Surgery \ Grade 3

Code: SURG 306 2 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Introduction to surgery				
SURG1.1	Define surgery and discuss its historical evolution, including key milestones and advancements in surgical techniques and technology. . Explain the principles of asepsis, antisepsis, and surgical ethics in modern surgical practice. . Discuss the role of surgery in managing various diseases, including trauma, cancer, infections, and congenital abnormalities. . Describe the different types of surgical procedures (elective, emergency, minimally invasive, and robotic surgery) and their indications.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG1.2	Recognize the preoperative, intraoperative, and postoperative phases of surgery and the importance of multidisciplinary collaboration. . Explain the common complications associated with surgery, including infection, bleeding, thrombosis, and anesthesia-related risks. . Discuss patient safety principles in surgery, including the use of checklists, consent processes, and surgical site infection prevention. . Recognize the impact of surgical innovations, including laparoscopic and robotic-assisted surgery, on patient outcomes and recovery.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Wounds, healing & tissue repair				
SURG2.1	Define different types of wounds (incised, lacerated, contused, puncture, and avulsion) and classify them based on depth and severity. . Explain the phases of wound healing (inflammatory, proliferative, and remodeling) and factors that influence wound healing. . Discuss the role of fibroblasts, collagen synthesis, and angiogenesis in tissue repair and wound contraction.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
SURG2.2	Identify systemic and local factors affecting wound healing, including diabetes, infection, ischemia, and nutritional deficiencies. . Explain the difference between primary, secondary, and tertiary intention healing and their clinical relevance. . Discuss the complications of wound healing, including hypertrophic scars, keloids, dehiscence, and chronic non-healing ulcers. . Recognize the importance of infection control in wound management, including the role of antiseptics, dressings, and negative pressure wound therapy.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Wounds, healing & tissue repair				
SURG3.1	Define chronic wounds and differentiate them from acute wounds in terms of pathophysiology and management. . Discuss the pathophysiology of pressure ulcers, venous ulcers, and diabetic foot ulcers, including risk factors and staging. . Explain the role of hyperbaric oxygen therapy, bioengineered skin substitutes, and skin grafts in chronic wound management.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG3.2	Explain the role of prophylactic antibiotics in surgical wound infection prevention and their appropriate use. . Describe the role of vacuum-assisted closure (VAC) therapy and its indications in wound management. . Recognize the importance of multidisciplinary care (e.g., plastic surgeons, vascular surgeons, and endocrinologists) in managing complex wounds. . Discuss the prevention of wound healing complications, including patient education, lifestyle modifications, and early intervention strategies.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Fluid and Electrolyte Balance				
SURG4.1	Explain the distribution of body fluids, including intracellular, extracellular, and transcellular compartments, and their clinical significance. . Discuss the physiological mechanisms regulating fluid balance, including osmoregulation, hormonal control (ADH, aldosterone), and renal function. . Recognize the clinical features, causes, and management of common fluid imbalances, including dehydration, hypovolemia, and hypervolemia.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG4.2	Discuss the causes, clinical presentation, and management of electrolyte imbalances, including hyponatremia, hyperkalemia, and hypocalcemia. . Describe the indications for intravenous fluid therapy, including types of fluids	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Acid Base Balance				
SURG5.1	Define acid-base balance and explain its physiological regulation through the respiratory and renal systems. . Discuss the concepts of pH, bicarbonate (HCO_3^-), and partial pressure of carbon dioxide ($PaCO_2$) in arterial blood gas (ABG) analysis. . Explain the causes, clinical manifestations, and management of metabolic acidosis, including diabetic ketoacidosis and lactic acidosis. . Discuss the pathophysiology and treatment of metabolic alkalosis, including vomiting-induced alkalosis and diuretic use.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
SURG5.2	Explain the causes, diagnosis, and management of respiratory acidosis and respiratory alkalosis in surgical patients. . Recognize the role of buffer systems (bicarbonate, phosphate, and protein buffers) i maintaining acid-base homeostasis. . Discuss the importance of arterial blood gas (ABG) interpretation in diagnosing acid-base disorders and guiding treatment. . Describe the principles of acid-base correction, including the use of intravenous bicarbonate therapy	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Skin & Subcutaneous Tissue				
SURG6.1	Describe the structure and function of the skin, including its layers (epidermis, dermis, and subcutaneous tissue) and their clinical significance. . Explain the pathophysiology of common skin infections, including cellulitis, abscesses, necrotizing fasciitis, and their management. . Discuss the principles of wound assessment, including classification of burns, ulcers, and traumatic skin injuries. . Describe the clinical presentation and management of pressure	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG6.2	Explain the role of surgical debridement, dressings, and skin grafting in wound management. . Discuss the diagnosis and treatment of benign skin lesions, including lipomas, epidermoid cysts, and dermatofibromas. . Recognize the importance of histopathological examination in differentiating benign from malignant skin lesions. . Discuss the role of reconstructive surgery, including flap techniques, in managing complex skin defects.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Skin & Subcutaneous Tissue				
SURG7.1	Explain the etiology and clinical presentation of soft tissue infections, including erysipelas, cellulitis, and necrotizing soft tissue infections. . Describe the principles of antibiotic selection for bacterial skin infections based on culture results and antimicrobial susceptibility. . Discuss the pathophysiology and management of necrotizing fasciitis, including early recognition, surgical debridement, and intensive care support. . Explain the risk factors, diagnosis, and treatment of hidradenitis suppurativa, including medical and surgical options.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG7.2	Discuss the classification, diagnosis, and management of chronic non-healing wounds, including venous and arterial ulcers. . Recognize the clinical features and management of cutaneous manifestations of systemic diseases, such as vasculitis and autoimmune skin conditions. . Explain the role of biologic and immunosuppressive therapies in treating inflammatory skin conditions like psoriasis and pemphigus vulgaris. . Discuss the principles of reconstructive plastic surgery in skin defect management, including grafting and local flap techniques.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Metabolic response to injury				
SURG8.1	Explain the physiological changes following injury, including the systemic inflammatory response and hormonal adaptations. . Discuss the phases of metabolic response to injury: the ebb phase, flow phase, and recovery phase. . Recognize the effects of trauma, burns, and major surgery on metabolism, including hypermetabolism and protein catabolism.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Explain the role of cytokines, stress hormones (cortisol, catecholamines), and inflammatory mediators in the metabolic response.			
SURG8.2	Discuss the pathophysiology and management of sepsis-induced metabolic derangements. . Describe the nutritional implications of hypermetabolism and catabolism in critically ill patients. . Explain the role of early enteral and parenteral nutrition in reducing morbidity and mortality in surgical patients. . Discuss the importance of monitoring metabolic parameters (e.g., glucose, lactate, nitrogen balance) in post-injury patient care.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Nutrition and fluid therapy				
SURG9.1	Explain the principles of perioperative nutrition and its impact on surgical outcomes. . Discuss the indications, benefits, and limitations of enteral versus parenteral nutrition in surgical patients. . Recognize the clinical manifestations and management of protein-energy malnutrition and its impact on wound healing.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG9.2	Describe the components of a balanced nutritional plan for surgical patients, including macronutrients, micronutrients, and fluid requirements. . Explain the importance of early nutrition in critically ill patients, including immune-enhancing diets. . Discuss the role of specialized nutrition in specific surgical conditions, such as short bowel syndrome and burns. . Explain the principles of refeeding syndrome, including prevention and management strategies	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Nutrition and fluid therapy				
SURG9.1	Explain the principles of perioperative nutrition and its impact on surgical outcomes.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Discuss the indications, benefits, and limitations of enteral versus parenteral nutrition in surgical patients. . Recognize the clinical manifestations and management of protein-energy malnutrition and its impact on wound healing.			
SURG9.2	Describe the components of a balanced nutritional plan for surgical patients, including macronutrients, micronutrients, and fluid requirements. . Explain the importance of early nutrition in critically ill patients, including immune-enhancing diets. . Discuss the role of specialized nutrition in specific surgical conditions, such as short bowel syndrome and burns. . Explain the principles of refeeding syndrome, including prevention and management strategies	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Nutrition and fluid therapy				
SURG10.1	Discuss the metabolic consequences of prolonged fasting and starvation in surgical patients. . Explain the role of nitrogen balance in assessing protein requirements and the need for supplementation. . Describe the indications and complications of total parenteral nutrition (TPN), including catheter-related infections and metabolic disturbances. . Explain the role of immunonutrition in critically ill patients, including arginine, glutamine, and omega-3 fatty acids.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
SURG10.2	Discuss the specific nutritional needs of patients undergoing major gastrointestinal surgery and bariatric surgery. Explain the concept of enhanced recovery after surgery (ERAS) protocols and their impact on perioperative nutrition. . Describe the assessment and management of micronutrient deficiencies, including vitamin and mineral supplementation. . Discuss the importance of monitoring electrolyte and metabolic parameters in patients receiving artificial nutrition.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Introduction to trauma				
SURG11.1	Define trauma and describe its epidemiology, including global burden and preventable causes. . Explain the primary survey (ABCDE approach) in trauma assessment and its clinical relevance. . Discuss the secondary survey in trauma evaluation, including systematic head-to-toe examination. . Describe the principles of damage control resuscitation, including permissive hypotension and hemostatic resuscitation.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG11.2	Explain the pathophysiology of traumatic shock, including hypovolemic, neurogenic, and septic shock. . Discuss the role of focused assessment with sonography for trauma (FAST) and extended FAST (eFAST) in trauma evaluation. . Explain the importance of the golden hour in trauma management and strategies to improve patient outcomes. . Discuss the indications for emergency surgical intervention in trauma patients, including exploratory laparotomy and thoracotomy.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Early assessment and management of severe trauma				
SURG12.1	Describe the principles of advanced trauma life support (ATLS) in the initial assessment of trauma patients. . Explain the role of prehospital care in trauma management, including airway management and fluid resuscitation. Discuss the indications and techniques for securing the airway in trauma patients, including endotracheal intubation and cricothyroidotomy. . Recognize the signs of life-threatening hemorrhage and discuss immediate hemorrhage control strategies.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Wounds, healing & tissue repair				
SURG12.2	Explain the role of point-of-care ultrasound in assessing trauma patients. . Discuss the management of traumatic brain injury, including intracranial pressure monitoring and neurosurgical intervention. . Explain the assessment and management of spinal cord injuries in trauma. 8. Discuss the role of trauma registries and quality improvement initiatives in improving trauma outcomes	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Torso and pelvic trauma				
SURG13.1	Discuss the common causes and mechanisms of blunt and penetrating torso trauma, including motor vehicle accidents and gunshot wounds. . Explain the classification and management of rib fractures, including flail chest and their complications (e.g., pneumothorax, hemothorax). . Describe the assessment and management of thoracic trauma, including tension pneumothorax, hemothorax, and cardiac tamponade. . Explain the diagnosis and management of solid organ injuries (liver, spleen, kidneys) in abdominal trauma, including non-operative management strategies.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Disaster surgery				
SURG14.1	Define disaster surgery and describe the principles of mass casualty triage (START and SALT systems). . Explain the role of damage control resuscitation and surgery in disaster scenarios. . Discuss the management of blast injuries, including primary, secondary, tertiary, and quaternary effects. . Describe the common surgical interventions in disaster settings, including amputations, fasciotomies, and debridement.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG14.2	Explain the principles of field hospitals and mobile surgical units in disaster response. . Discuss the role of multidisciplinary teams, including surgeons, anesthetists, and emergency physicians, in disaster management. . Recognize the challenges of resource-limited settings and ethical dilemmas in disaster surgery. . Explain post-disaster rehabilitation strategies, including prosthetics, reconstructive surgery, and psychological support	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Conflict surgery				
SURG15.1	Define conflict surgery and discuss the unique challenges of providing surgical care in war zones. . Explain the management of gunshot wounds, including wound ballistics and debridement principles. . Discuss the pathophysiology and management of blast injuries, including lung, brain, and abdominal injuries. . Describe the role of tourniquets, hemostatic agents, and damage control surgery in combat trauma	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG15.2	Explain the management of open fractures, amputations, and soft tissue injuries in battlefield conditions.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Discuss the challenges of infection control, including multidrug-resistant organisms in conflict zones. . Recognize the importance of humanitarian surgical missions and organizations like the ICRC and MSF. . Explain the principles of post-war rehabilitation, including reconstructive surgery and psychological support for war-injured patients.			
Abdominal incisions & sutures material				
SURG16.1	Describe the different types of abdominal incisions and their indications (midline, paramedian, Kocher's, Pfannenstiel, etc.). . Explain the advantages and disadvantages of each type of incision concerning wound healing and postoperative complications. . Discuss the classification and properties of suturing materials (absorbable vs. non-absorbable, monofilament vs. multifilament). . Explain the principles of wound closure techniques, including interrupted, continuous, and subcuticular suturing	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Skin & Subcutaneous Tissue				
SURG16.2	Recognize the complications of improper wound closure, including wound dehiscence and incisional hernias. . Discuss the role of surgical staplers and adhesives in modern surgical wound closure. . Explain the factors influencing suture selection based on tissue type (e.g., skin, fascia, bowel). . Describe the principles of postoperative wound care, including dressing selection and infection prevention.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Cyst, Ulcer, Sinus				
SURG17.1	Discuss the common causes of sebaceous cysts, dermoid cysts, and pilonidal cysts, including their surgical management.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Explain the pathophysiology and classification of ulcers, including venous, arterial, and neuropathic ulcers. . Describe the diagnosis and management of chronic ulcers, including wound debridement, dressings, and skin grafting. . Discuss the causes and management of common sinuses and fistulas, including pilonidal sinuses and anal fistulas.			
SURG17.2	Explain the principles of chronic wound care, including the role of negative pressure wound therapy. . Recognize the risk factors and management strategies for malignant transformation in chronic ulcers (Marjolin's ulcer). . Discuss the role of biopsy and histopathological examination in diagnosing non-healing ulcers.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Surgical Infection				
SURG18.1	Define surgical infections and classify them into superficial, deep, and organ/space infections. . Discuss the microbiology of common surgical infections, including Staphylococcus aureus, Streptococcus, and anaerobes. . Explain the principles of surgical site infection (SSI) prevention, including antibiotic prophylaxis and aseptic technique. . Describe the diagnosis and management of abscesses, cellulitis, and necrotizing soft tissue infections.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG18.2	Discuss the management of deep-seated infections, including peritonitis, mediastinitis, and necrotizing fasciitis. . Explain the role of source control in surgical infection management, including drainage and debridement. . Recognize the importance of multidrug-resistant organisms and antibiotic stewardship in surgical practice. . Discuss the complications of untreated surgical infections, including sepsis and multi-organ failure	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Surgical Infection				
SURG19.1	Explain the pathophysiology and risk factors for sepsis and septic shock in surgical patients. . Discuss the criteria for diagnosing sepsis (qSOFA, SIRS criteria) and the importance of early recognition. . Describe the principles of sepsis management, including fluid resuscitation, vasopressor therapy, and early antibiotics. . Explain the indications for surgical intervention in sepsis, including source control strategies.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG19.2	Discuss the role of biomarkers (e.g., procalcitonin, lactate) in sepsis diagnosis and monitoring. . Recognize the long-term complications of sepsis, including post-sepsis syndrome and organ dysfunction. . Explain the role of infection prevention strategies in surgical wards, including hand hygiene and antibiotic stewardship. . Discuss the impact of nosocomial infections and multidrug-resistant pathogens in surgical patients.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Sterilization & Disinfection				
SURG20.1	Define sterilization and disinfection and explain their importance in infection control. . Discuss the different methods of sterilization, including autoclaving, ethylene oxide gas, and plasma sterilization. . Explain the principles of high-level, intermediate-level, and low-level disinfection. . Describe the indications and uses of chemical disinfectants, including alcohol, chlorhexidine, and formaldehyde.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
SURG20.1	Discuss the importance of sterilization in surgical instrument processing and its impact on surgical outcomes. . Explain the role of aseptic technique in preventing surgical site infections. . Recognize the challenges and solutions in maintaining sterile environments in operating rooms. Discuss infection control policies and quality assurance measures in healthcare settings	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Tropical infections and infestations				
SURG21.1	Define tropical infections and discuss their epidemiology, including endemic regions and risk factors. . Explain the clinical presentation, diagnosis, and surgical complications of amoebic liver abscess, including drainage techniques. . Discuss the pathophysiology and management of schistosomiasis-related urological and hepatic complications. . Describe the surgical implications of hydatid disease, including cystectomy and perioperative considerations.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG21.1	Recognize the clinical features and management of filariasis-related lymphatic obstruction and elephantiasis. . Explain the surgical approach to necrotizing fasciitis in tropical settings, including aggressive debridement and antibiotic therapy. . Discuss the impact of tropical infections on wound healing and postoperative recovery. . Explain the principles of infection control and vaccination strategies in endemic region	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Hydatid Cysts				
SURG22.1	Describe the life cycle of Echinococcus granulosus and its role in hydatid cyst formation. . Explain the clinical presentation and complications of hydatid cysts in the liver, lungs, and other organs. . Discuss the imaging modalities used for diagnosing hydatid cysts, including ultrasound and CT scans.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Explain the surgical management of hydatid cysts, including PAIR (puncture, aspiration, injection, and reaspiration) and open surgery			
SURG22.2	Discuss the medical treatment of hydatid disease, including the role of albendazole and mebendazole. . Recognize the complications of untreated hydatid cysts, including rupture, secondary infection, and anaphylaxis. . Explain preventive measures to reduce the transmission of Echinococcus infection in endemic areas. . Discuss the importance of multidisciplinary management involving surgeons, infectious disease specialists, and radiologists	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Principles of oncology				
SURG23.1	Define oncology and discuss the basic principles of cancer biology, including carcinogenesis and tumor progression. . Explain the TNM staging system and its role in guiding cancer management. . Describe the different modalities of cancer treatment, including surgery, chemotherapy, radiotherapy, and targeted therapy. . Discuss the indications and principles of oncologic surgery, including curative, palliative, and cytoreductive surgery.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG23.2	. Explain the role of sentinel lymph node biopsy in cancer staging and treatment. 6. Recognize the principles of cancer screening programs, including colorectal, breast, and cervical cancer screening. . Discuss the complications of cancer treatment, including chemotherapy-induced immunosuppression and radiation fibrosis. . Explain the psychosocial aspects of cancer care, including palliative care and end-of-life decision-making.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Tissue & Molecular Diagnosis				
SURG24.1	Explain the principles of tissue biopsy techniques, including excisional, incisional, core needle, and fine needle aspiration biopsy (FNAB). . Discuss the role of histopathology and immunohistochemistry in cancer diagnosis. . Explain the significance of tumor markers (e.g., CEA, AFP, CA-125) in cancer diagnosis and prognosis. . Describe the principles of molecular pathology, including PCR, fluorescence in situ hybridization (FISH), and next-generation sequencing.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG24.2	Discuss the role of genetic testing in hereditary cancer syndromes, including BRCA mutations and Lynch syndrome. . Explain the importance of frozen section analysis in intraoperative cancer diagnosis. . Discuss the impact of precision medicine in tailoring cancer treatment based on molecular profiling. . Recognize the limitations and ethical considerations of molecular diagnostics in clinical practice.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Arterial Disorder				
SURG25.1	Describe the anatomy and physiology of arterial circulation and its clinical relevance. . Discuss the pathophysiology, risk factors, and classification of peripheral arterial disease (PAD). . Explain the clinical presentation and diagnostic evaluation of acute and chronic limb ischemia.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG25.2	Discuss the indications for surgical and endovascular interventions in PAD, including angioplasty and bypass surgery. . Explain the management of aortic aneurysms, including surveillance, open repair, and endovascular aneurysm repair (EVAR).	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Recognize the complications of arterial disorders, including embolism, thrombosis, and critical limb ischemia. . Discuss the role of lifestyle modification and pharmacological therapy in the prevention of arterial disease. . Explain the principles of postoperative care and rehabilitation in vascular surgery			
Venous Disorder				
SURG26.1	Describe the anatomy and function of the venous system, including superficial and deep veins. . Discuss the pathophysiology and risk factors of chronic venous insufficiency (CVI) and varicose veins. . Explain the clinical presentation and diagnostic approach to deep vein thrombosis (DVT). . Discuss the medical and surgical management of varicose veins, including sclerotherapy, vein stripping, and endovenous ablation.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG26.2	Explain the complications of untreated venous disorders, including venous ulcers and post-thrombotic syndrome. . Discuss the indications for anticoagulation therapy in venous thromboembolism (VTE). . Explain the role of compression therapy and lifestyle modifications in the management of venous disorders. . Recognize the importance of thromboprophylaxis in hospitalized and post-surgical patients	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Lymphatic Disorder				
SURG27.1	Explain the anatomy and physiology of the lymphatic system and its role in immune function. . Discuss the pathophysiology and causes of lymphedema, including primary and secondary lymphedema. Recognize the clinical presentation and diagnostic evaluation of lymphatic obstruction.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Discuss the conservative and surgical management of lymphedema, including compression therapy and lymphovenous anastomosis.			
SURG27.2	Explain the role of lymph node biopsy in the staging of malignancies. . Discuss the diagnosis and management of lymphadenopathy, including infectious, inflammatory, and neoplastic causes. . Recognize the complications of chronic lymphedema, including cellulitis and lymphangiosarcoma. . Discuss the impact of lymphatic disorders on quality of life and rehabilitation strategies	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
DVT & gangrene				
SURG28.1	Explain the pathophysiology and risk factors for deep vein thrombosis (DVT), including Virchow's triad. . Discuss the clinical presentation and diagnostic approach to DVT, including D-dimer testing and Doppler ultrasound. . Explain the principles of anticoagulation therapy in DVT management, including indications and complications. . Discuss the pathophysiology and classification of gangrene, including dry, wet, and gas gangrene	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG28.2	Explain the clinical features and management of Fournier's gangrene and necrotizing fasciitis. . Recognize the indications for surgical debridement and amputation in gangrenous conditions. . Discuss the role of hyperbaric oxygen therapy in managing gas gangrene. . Explain the importance of thromboprophylaxis in preventing DVT in surgical and immobilized patients	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Shock & hemorrhage				
SURG29.1	Define shock and classify its types, including hypovolemic, cardiogenic, distributive, and obstructive shock. . Discuss the pathophysiology and compensatory mechanisms of shock. . Explain the clinical presentation and diagnostic approach to shock, including hemodynamic monitoring. . Discuss the principles of fluid resuscitation, including crystalloid and colloid solutions.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG29.2	Explain the management of hemorrhagic shock, including blood transfusion and damage control resuscitation. . Discuss the indications for massive transfusion protocols in trauma and surgical patients. . Recognize the complications of shock, including multi-organ dysfunction syndrome (MODS). . Explain the role of vasopressors and inotropes in managing different types of shock	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
Blood transfusion				
SURG30.1	Explain the principles of blood transfusion, including blood grouping, crossmatching, and compatibility testing. . Discuss the indications and contraindications for blood transfusion in surgical practice. . Describe the different blood products (whole blood, packed red blood cells, platelets, fresh frozen plasma, cryoprecipitate) and their clinical use. . Recognize the complications of blood transfusion, including hemolytic reactions, febrile reactions, and transfusion-related infections.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ
SURG30.2	Discuss the management of massive transfusion protocols in trauma and perioperative settings. . Explain the principles of autologous blood transfusion and intraoperative cell salvage.	K/S	LARGE GROUP TEACHING	SHORT ANSWER QUESTION / MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	. Discuss the role of transfusion in managing anemia and coagulopathy in surgical patients. . Explain the ethical considerations and guidelines for safe blood donation and transfusion practices			

Biostatistics and public health

Third Grade

1. Educational Institution	University of Al-Ameed
2. Scientific Department/Center	College of Medicine / Department of Public health and family medicine (Biostatistics and family medicine)
3. Name of academic or professional program	Modified traditional curriculum
4. Name of the final certificate	M.B.Ch.B
5. Academic System: Annual / Courses / Other	Annual
6.Accredited Certification Program	Iraqi National Guideline on Standards for Established and Accrediting Medical School
7.Other external influences	Availability of relevant scientific research in the field of specialization Access to global electronic networks Access to traditional and digital libraries Teaching aids such as data show and PowerPoint presentations Availability of equipped classrooms Use of free online communication platforms (e.g., Free Conference Call)
8. Description preparation date	15/9/2024

9- Objectives of the academic program:

- Developing the ability to use prevention and control measures for health problems in the communities, understanding core concepts of biostatistics: descriptive statistics, inferential statistics, correlation and regression.
- Acquiring abilities and skills related to epidemiology and statistics in analyzing health indicators, understanding core concepts of public health: principles of public health.
- Understanding the basic principles of primary health care and communities medicine as a strategy and services, disease prevention and health promotion, epidemiology.
- Identifying communities' health problems, prioritizing and managing them, including communicable and non-communicable diseases, reproductive, nutritional, and injuries
- The ability to work in a team with leadership skills.

• Integration and Application: applying biostatistics to public health problems, be able to use basic statistical methods to analyze public health data. • Apply biostatistical and public health principles to identify and analyze health problems within the local communities.
13. The most reliable resources for program information are: • Richard S.Snell, Clinical Anatomy by Regions, . Lippincott Williams & Wilkins • Moore, Keith L.; Dalley, Arthur F, Clinically Oriented Anatomy, Lippincott Williams & Wilkins • ABC OFLEARNING AND TEACHING IN MEDICINE by PETER CANTILLON 2003 ISBN 07279 16785 • Teaching and Learning Communication Skills in Medicine by Suzanne Kurtz Professor of Communication Faculties of Education and Medicine 2004

Biostatistics and public health \ Grade 3	
BIPH 307	2 Credits

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
1.Introduction to Biostatistics				
BIPH1.1	. Explain how biostatistics aids in interpreting research and guiding clinical decisions, recognize the role of biostatistics in evidence-based medicine. . Connect biostatistics to evaluating diagnostic tests, treatment effectiveness, and risk assessment.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH1.2	. Describe hypothesis testing principles, including Type I and Type II errors, identify common statistical tests in medical research (e.g., t-tests, chi-square tests). . Understand the clinical use of hypothesis testing in comparing treatments and assessing risk factors.	K	Large group lecture	, comprising multiple choice questions, single best answer
2.Summerization and Presentation of Data				
BIPH2.1	Explain the importance of organizing data to understand its types and ranges, describe the use of frequency distribution in organizing a dataset into exclusive intervals. selects appropriate tables and graphs for different types of clinical data.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH2.2	Explain the advantages of using graphs for data presentation, including simplicity, clarity, and visual impact. . explain the advantages of using graphs for data presentation, including simplicity, clarity, and visual impact	K	Large group lecture	, comprising multiple choice questions, single best answer

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
3.Measures of Central Tendency				
BIPH3.1	Explain the concept of a distribution in statistics and its relevance to medical data, define the mean and describe how it is calculated. . Calculate and interpret mean values for patient characteristics (e.g., average age, average blood pressure) and understand its use in clinical studies.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH3.2	. Define the median and describe how it is calculated, define the mode and describe how it is identified. Select and justify the use of the appropriate measure of central tendency in different clinical scenarios and research contexts.	K	Large group lecture	, comprising multiple choice questions, single best answer
4. Measures of Variability				
BIPH4.1	. Define variability and its importance in the context of medical data, define the range and describe how it is calculated. . understand how the range is used to describe the spread of values in patient data, such as age ranges or ranges in lab values.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH4.2	. Define the interquartile range (IQR) and describe how it is calculated. . Learn how IQR is applied in clinical settings, such as in interpreting growth charts or understanding variability in treatment response.	K	Large group lecture	, comprising multiple choice questions, single best answer
5. Measures of Variability2				
BIPH5.1	. Define variance and describe how it is calculated. . Interpret variance in the context of clinical data, such as variability in patient response to treatment.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH5.2	. Define standard deviation and explain its relationship to variance. . Apply standard deviation to understand the typical deviation from the mean in patient data, lab values, and research results.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH5.3	. Define the standard error of the mean. . Understand the role of standard error in assessing the reliability of sample means and its implications for generalizing research findings to a broader population.	K	Large group lecture	, comprising multiple choice questions, single best answer

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
6.Confidence Interval				
BIPH6.1	. Define a confidence interval and explain its purpose in statistical inference. . Apply confidence intervals in the interpretation of medical research findings.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH6.2	. Explain that a confidence interval provides a range of values likely to contain the true population parameter. . Use confidence intervals to evaluate the statistical significance and clinical importance of treatment effects, diagnostic accuracy, and other relevant measures.	K	Large group lecture	, comprising multiple choice questions, single best answer
7.Introduction to Nutrition				
BIPH7.1	. Define nutrition and describe its relationship to health and well-being, explain why nutrition is essential for life, health, and development across all life stages.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH7.2	. Describe how proper nutrition supports wellness and can prevent diseases, explain the role of nutrition in building, repairing, and maintaining tissues.	K	Large group lecture	, comprising multiple choice questions, single best answer
8.Energy Requirements				
BIPH8.1	a. Explain the human body's continuous need for a regular supply of nutrients. b. Identify the purposes for which the body requires energy, including body processes, growth, and physical activity.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH8.2	. Identify the components of total energy requirements (TER), including basal metabolic rate (BMR), physical activity, specific dynamic action of food (SDA) (or thermic effect of food (TEF)), and other factors like growth, pregnancy, lactation, and temperature regulation.	K	Large group lecture	, comprising multiple choice questions, single best answer

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
9.Assessement of Nutritional Status				
BIPH9.1	. Define nutritional status as the balance between nutrient intake and requirement, emphasizing how this balance affects patients' health. . Explain how to apply direct assessment methods (clinical, biochemical, anthropometric, and biophysical techniques) to evaluate individual patients' nutritional status.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH9.2	. Explain the clinical importance of nutritional status in patient care, including its role in recovery, disease management, and overall health outcomes. . Describe the use of indirect assessment methods (socioeconomic, dietary, and cultural factors) in understanding factors that influence patients' nutritional health	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH9.3	a. Identify factors that commonly affect nutritional status in patients, such as acute and chronic diseases, eating disorders, psychological stress, and economic limitations. b. Explain how these factors can influence nutrient intake, absorption, and utilization, and discuss strategies to address them in clinical practice.	K	Large group lecture	, comprising multiple choice questions, single best answer
10.Nutrient Requirement\Carbohydrate				
BIPH10.1	. Describe the functions of simple and complex carbohydrates: Identify monosaccharides, and disaccharides, as simple carbohydrates and explain their roles as quick energy sources. Explain that polysaccharides, are complex carbohydrates and describe their different roles in energy storage (starch and glycogen) and digestion (fiber).	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH10.2	Describe the health effects of carbohydrates: . Explain how carbohydrates are digested and used for energy (ATP) in the body. . Discuss the importance of complex carbohydrates over simple carbohydrates for sustained energy and better health.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH10.3	a. Define glycemic index. b. Explain the concept of the glycemic index (GI) and its use in ranking foods based on their effect on blood glucose levels.	K	Large group lecture	, comprising multiple choice questions, single best answer

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
11.Nutritional Disorder (Malnutrition)				
BIPH11.1	Define malnutrition and its various forms, emphasizing the global burden and epidemiological significance of malnutrition. This includes understanding the definitions of undernutrition (wasting, stunting, underweight), micronutrient deficiencies, and over nutrition, as well as the prevalence and distribution of these conditions worldwide and in specific populations.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH11.2	. Identify populations at risk for malnutrition and analyze the multifactorial causes of malnutrition in different clinical settings.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH11.3	a. Describe the clinical manifestations, diagnostic criteria, and complications of specific malnutrition disorders, including protein-energy malnutrition and micronutrient deficiencies. This includes differentiating between conditions like kwashiorkor and marasmus. b. recognizing the signs and symptoms of vitamin and mineral deficiencies, and understanding the impact of malnutrition on organ systems and overall health.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH11.4	a. Apply public health principles to the prevention and control of malnutrition, including screening, nutritional interventions, and health education. b. Discuss the treatment and management of malnourished patients, emphasizing the importance of interdisciplinary care and follow-up.	K	Large group lecture	, comprising multiple choice questions, single best answer
12.Micronutrien Related Malnutrition				
BIPH12.1	a. Define micronutrient malnutrition and assess its global significance, with a focus on vulnerable populations. This includes understanding the difference between micronutrient deficiencies and excesses, b. identifying populations at risk (e.g., pregnant women, children, elderly), and discussing the prevalence and impact of micronutrient malnutrition on global health.	K	Large group lecture	, comprising multiple choice questions, single best answer

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
BIPH12.2	Identify the most common micronutrient deficiencies (iron, vitamin A, iodine, zinc, folate, and vitamin B12), and analyze their causes, clinical features, and diagnostic approaches.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH12.3	Discuss the impact of micronutrient deficiencies on public health outcomes, including morbidity, mortality, and developmental consequences. This includes evaluating the role of micronutrients in preventing diseases, reducing mortality rates (especially in vulnerable groups), and promoting optimal growth and development.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH12.4	Outline evidence-based strategies for the prevention and management of micronutrient deficiencies, including supplementation, fortification, dietary interventions, and public health measures. This involves implementing effective interventions to improve micronutrient status at both individual and population levels, such as promoting iron-rich diets, vitamin A supplementation, iodine fortification, and zinc supplementation.	K	Large group lecture	, comprising multiple choice questions, single best answer
13.Distribution				
BIPH13.1	a. Understanding the Normal Distribution: Define the normal distribution and its key characteristics (bell-shaped curve, symmetry, mean, median, mode) b. Explain the clinical significance of skewed data and the appropriate measures of central tendency (median vs. mean).	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH13.2	Recognize and: Identify real-world examples of data that tend to follow a normal distribution in public health (e.g., blood pressure, height, weight).	K	Large group lecture	, comprising multiple choice questions, single best answer
14. Scales of measurement				
BIPH14.1	a. Define the four scales of measurement: nominal, ordinal, interval, and ratio. b. Explain the properties of each scale, including how they categorize, order, and establish intervals and true zero points.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH14.2	Provide real-world examples of each scale in a public health context. Provide examples of nominal data like blood type and gender, ordinal data like pain scales and satisfaction ratings, interval data like temperature and pH, and ratio data like height, weight, and enzyme activity	K	Large group lecture	, comprising multiple choice questions, single best answer

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15. Sampling methods				
BIPH15.1	Describe the two types of sampling methods: probability sampling and non-probability sampling.	K	Large group lecture	comprising multiple choice questions, single best answer
BIPH15.2	Identify the four main types of non-probability sample: convenience sampling, voluntary response sampling, purposive sampling, and snowball sampling.	K	Large group lecture	comprising multiple choice questions, single best answer
16. Statistical hypotheses				
BIPH16.1	understand that the goal of research is to investigate relationships between variables within a population	K	Large group lecture	comprising multiple choice questions, single best answer
BIPH16.2	formulate a statistical hypothesis, which is a formal way of writing a prediction about a population.	K	Large group lecture	comprising multiple choice questions, single best answer
17. Overweight and obesity				
BIPH17.1	Know the prevalence of obesity in the world, define obesity, its types, and measurements.	K	Large group lecture	comprising multiple choice questions, single best answer
BIPH17.2	Recognize the etiology, risk factors, and pathophysiology of obesity	K	Large group lecture	comprising multiple choice questions, single best answer
BIPH17.3	Know prevention and public health strategies for obesity.	K	Large group lecture	comprising multiple choice questions, single best answer
18. Nutrition during pregnancy				
BIPH18.1	Recognize factors effecting on maternal nutrition identify possible outcomes of maternal under nutrition	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH18.2	Recognize principles of nutritional requirements for pregnant women	K	Large group lecture	, comprising multiple choice questions, single best answer
19. Nutrition for elderly				

Number	Learning Objective	Domain K/S/A/C*	Teaching Learning Methods	Assessment Methods
BIPH19.1	explain the nutrient requirements for elderly individuals, including energy, protein, carbohydrates, vitamins, and minerals	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH19.2	describe the role of nutrition in managing neurocognitive disorders in the elderly, including dementia and Alzheimer's disease.	K	Large group lecture	, comprising multiple choice questions, single best answer
20. Medical nutrition therapy of cardiovascular diseases				
BIPH20.1	a. Identify the cardiovascular diseases, pathophysiology, risk factors of CVD and its prevalence. b. recognizes the role of nutrition in cardiovascular disease (CVD) management.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH20.2	Identify key dietary recommendations for CVD prevention and treatment, identify key dietary recommendations for CVD prevention and treatment.	K	Large group lecture	, comprising multiple choice questions, single best answer
21. Medical nutrition therapy for diabetes mellitus				
BIPH21.1	List types of diabetes milletus, prevalence and risk factors, define medical nutritional therapy and its rule in management of Type 1 and 2 Diabetes Mellitus.	K	Large group lecture	, comprising multiple choice questions, single best answer
BIPH21.2	Explain the impact of MNT on blood glucose control, insulin sensitivity and weight management in diabetic, explain the impact of MNT on blood glucose control, insulin sensitivity and weight management in diabetic.	K	Large group lecture	, comprising multiple choice questions, single best answer