



Teaching plan for the semester form(2025-2026)

Course Instructor	Prof. Maitham abas Makei, Prof. Mona A. Hameed				
E_mail	Mabbas@mu.edu.iq				
Title	Adv. Microbiology				
Course Coordinator	(15) week, Two hours per week.				
Course Objective	The objective of the Microbiology course is to provide students with a comprehensive understanding of microorganisms, including bacteria, viruses, fungi, and parasites, and their roles in health, disease, and the environment.				
Course Description	This course provides an introduction to the study of microorganisms, including bacteria, viruses, fungi, and parasites, and their impact on human health, disease, and the environment. Students will explore microbial structure, physiology, genetics, metabolism, and classification. The course emphasizes the mechanisms of microbial pathogenesis, host-microbe interactions, and the body's immune response. Laboratory components provide hands-on experience in isolating, cultivating, identifying, and analyzing microorganisms using standard microbiological techniques. The course also covers applications of microbiology in clinical diagnostics, infection control, biotechnology, and public health. By integrating theoretical knowledge with practical skills, students will develop critical thinking and problem-solving abilities relevant to scientific research, healthcare, and microbiology-related professions.				
Textbook					
References	• Review of medical microbiology . Jawetz. • Lange Medical Microbiology, 24th Edition: Jawetz, Melnick, & Adelberg; McGraw-Hill Medical 2007. • Jawetz, Melnick, & Adelberg's Medical Microbiology twenty-fourth edition Geo. F. Brooks, et al. • Medical Microbiology and Infection at a Glance Stephen H. et al.				
Course Assessment	Term Tests	Laboratory	Seminar	Project	Final Exam
	25%		5%		70%
General Notes	Type here general notes regarding the course				



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week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1		General Aspects of Medical Microbiology Pathogens. Subcellular Infectious Entities , Prokaryotic and Eukaryotic Microorganisms, Bacteria, Fungi and Protozoa, Animals. Host–Pathogen Interactions: Determinants of Bacterial Pathogenicity and Virulence. Adhesion, Invasion and Spread, Strategies against Nonspecific Immunity , Strategies against Specific Immunity, Clinical Disease, Regulation of Bacterial Virulence, The Genetics of Bacterial Pathogenicity.	Seminar	
2		Defenses against Infection: Nonspecific Defense Mechanisms, Specific Defense Mechanisms, Defects in Immune Defenses. Normal Flora General Epidemiology: Epidemiological Terminology, Transmission, Sources of Infection, Transmission, Sources of Infection,	Seminar	
3		General Bacteriology: The Morphology and Fine Structure of Bacteria. The Physiology of Metabolism and Growth in Bacteria: Bacterial Metabolism, Types of Metabolism, Catabolic Reactions, Anabolic Reactions, Metabolic Regulation,	Seminar	
4		Growth and Culturing of Bacteria: Nutrients , Growth and Cell Death. Bacteriophages : Definition, Morphology, Composition, Reproduction, Lysogeny. The Principles of Antibiotic Therapy: Definitions, Spectrum of Action, Efficacy, Mechanisms of Action, Pharmacokinetics, Side Effects. The Problem of Resistance: Definitions, Incidence, Significance, Resistance Mechanisms, Evolution of Resistance to Anti-Infective Agents, Resistance Tests, Combination Therapy.	Seminar	

5		General Mycology: General Characteristics of Fungi: Definition and Taxonomy, Morphology, Metabolism, Reproduction in Fungi. General Aspects of Fungal Disease: Fungal Allergies and Fungal Toxicoses , Mycogenic Allergies, Mycotoxicoeses.	Seminar	
6		Mycoses: Host-Pathogen Interactions Diagnosis, Therapy.	Seminar	
7		General Virology: Definition , Morphology and Structure, Classification, Replication, Viral Protein Synthesis, Genetics.	Seminar	
8		Host-Cell Reactions: Cell Destruction (Cytocidal Infection ,Necrosis), Non cytocidal Infection, Latent Infection, Tumor Transformation. Pathogenesis Defense Mechanisms Prevention Chemotherapy	Seminar	
9		Basic Principles of Immunology: The Immunological Apparatus : The B-Cell System : Immunoglobulin Structure , Immunoglobulins, The Different Classes of Immunoglobulins. The T-Cell System : T-Cell Receptors (TCR) and Accessory Molecules T-Cell Specificity and the Major Histocompatibility Complex (MHC) T-Cell Maturation: Positive and Negative Selection T-Cell Subpopulations	Seminar	
10		Immune Responses and Effector Mechanisms : B Cells B-Cell Epitopes and B-Cell Proliferation Monoclonal Antibodies, T-Independent B Cell Responses. T Cells T-Cell Activation, T-Cell Activation by Superantigens,	Seminar	
11		Interactions between Cells of the Immune System: Collaboration, Sub populations of T- Helper Cells, Cytotoxic T-Cells (CD8+T-Cells), Cytokines (Interleukins) and Adhesion, Antibody-Dependent Cellular Immunity and Natural Killer Cells, Mechanisms. The Complement System Immunological Cell Death	Seminar	
12		Immunological Tolerance : T-Cell Tolerance B-Cell Tolerance	Seminar	

		Immunological Memory: B-Cell Memory T-Cell Memory		
13		Immune Defenses against Infection and Tumor Immunity: General Rules Applying to Infection Defenses Immune Protection and Immunopathology Tumor Immunity	Seminar	
14		The Pathological Immune Response: Type I: IgE- Triggered Anaphylaxis Type II: Cytotoxic Humoral Immune Responses Type III: Diseases Caused by Immune Complexes Type IV: Cell-mediated Immunopathology Transplantation Immunity	Seminar	
15		Immune Defects and Immune Response Modulation: Immune Defects Immuno regulation Immuno stimulation Immuno suppression Adaptive Immunotherapy	Seminar	

Instructor Signature:

Dean Signature:

Prof. Maitham A.Makei

Prof. Mona A. Hameed