Course Title	**Basic Immunology and Microbiology**				
Course Code	MD245				
Course Type	Compulsory				
Level	1st Cycle (MD)				
Year / Semester	2nd Year / 4th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hrs / 14 weeks	Laboratories / week	3 hrs / 14 weeks
Course Purpose and Objectives	The purpose and objectives of this course are the provision of general and fundamental knowledge in basic microbiology and immunology principles to medical students so as to prepare them for the more advanced **Medical Microbiology**, infectious and autoimmune diseases. In more detail, to familiarize students with the multiple roles, the structure, nutritional/environmental requirements and taxonomy of bacterial, fungal, viral and parasitic agents, their replication/growth, and virulence and how this leads to the disease. The course should also provide knowledge about physical and chemical methods of control, and basic laboratory methods of isolation and identification of the main pathogens. **In immunology**, basic topics will be covered such as the description of cells and organs of the immune system; the innate immune system including humoral mechanisms: cytokines & complement; an overview of the adaptive immune system including antigen processing & presentation; the activation and regulation of innate and adaptive immunity including cellular mechanisms & receptor, immunization principles and defense mechanisms of the human host. Hypersensitivity and autoimmunity reactions will be explained, including tumor immunology and immunodeficiency. The course will cover also the subject of vaccination and the and new types of vaccines. The lab covers basic microbiology techniques of cultures, stains isolation and identification of the most common pathogens.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Discuss the fundamentals and history of Microbiology and Immunology • Describe the general characteristics, structure, and taxonomic classification of each category of microorganisms: Bacteria, Viruses, Fungi and Parasites. Prokaryotes vs Eukaryotes, Spores, Prions and the differences between them. • Describe the basic nutritional and environmental requirements for growth and multiplication of all classes of microorganisms				

	• Describe how the virulence of these organisms leads to human disease; and how humans try to prevent or treat these diseases. • Describe and apply the various physical and chemical methods for the control of microorganisms (disinfection and sterilization) • Know the basic components of the immune system • Understand its function in health and disease (immune deficiencies, immunity and infection, autoimmunity, hypersensitivity disease, tumor immunology , transplantation, immunotherapy) • Outline the principles of vaccinations and the mechanism of protection from infection • Describe the various tests and laboratory techniques used in clinical diagnostics • Demonstrate skills for basic culture techniques in the laboratory and the expertise to stain and use the optical microscope for microbiological diagnosis. • Explain the tests used by microbiologists to isolate and identify the main pathogens of bacteria and fungi.		
Prerequisites	None	Co-requisites	None
Course Content	• Fundamentals of microbiology and Immunology, a historical perspective • General characteristics of microorganisms. Their role in life on planet earth • Microbial structure and taxonomy: Bacteria, Fungi, Parasites, Viruses, Prions • Microbial Nutritional Requirements, growth and multiplication • Physical and Chemical methods for the Control of microorganisms Microbiological basis of the clinical use of antimicrobials. • Disinfection, Sterilization and Antisepsis • Microbial genetics • Techniques for microbiological, immunological, parasitological and serological diagnosis and interpretation of results. • The innate immune system including humoral mechanisms: cytokines & complement • An overview of the adaptive immune system including antigen processing & presentation & antibody diversity. • The activation and regulation of innate and adaptive immunity including cellular mechanisms & receptors • Cell co-operation and effectors' mechanisms including immune evasion and principles governing vaccination • Antibody structure and interaction with antigens; The molecular basis of antigen specificity ;		

	• Self/non-self-discrimination and disorders of the immune system; • Immunization principles and defense against infectious diseases; Vaccinations
Teaching Methodology	Face-to-face
Bibliography	Microbiology: An Introduction; Tortora, Gerald; Funke, Case 978-0321798541; Pearson; Brock, Biology of Microorganisms, Madigan, Martinko, Bender, Buckley, Stahl, Brock. ISBN-10 032189739 Basic Immunology Updated Edition: Functions and Disorders of the Immune System . Abu K. Abbas MBBS , Andrew H. H. Lichtman ; With STUDENT CONSULT Online Access, 4e (Basic Immunology: Functions and Disorders of the Immune System) Saunders; ISBN-10: 141605569X, ISBN-13: 978-1416055693. Immunology. Thao Doan, Roger Melvold , Susan Viselli, Carl Waltenbaugh Wolters Kluwer- Lippincott Williams and Wilkins, ISBN 987654321 Basic Practical Microbiology. A Manual .Society for General Microbiology (SGM) ,ISBN 0 95368 383 4, Microbiology and Immunology (Board Review Series) Louise Hawley et al . Wolters Kluwer-Lippincott Williams and Wilkins, USMLE Step 1, Immunology and Microbiology Lecture notes. Kim Moscatello et al .Kaplan Inc
Assessment	Examinations: 70% Assignment/Lab 20% Class Participation: 10%
Language	English