Course Title	**Introduction to Microbiology**				
Course Code	ABS201				
Course Type	Compulsory				
Level	BSc (Level 1)				
Year / Semester	2nd year /1st Semester				
Teacher's Name	Dr Sofia Kyratzi, Dr Stavroula Gouzelou				
ECTS	6	Lectures / week	3	Laboratories / week	2
Course Objectives	The main objective of the course is to help students gain the theoretical knowledge and skills needed in Microbiology, enabling students to understand the latest trends in diagnosis, treatment and research related to Microbiology.				
Learning Outcomes	At the completion of the course the student will be able to: • Recognize and explain the terminology and the basic concepts of the Microbiology. • Describe the classification, nomenclature, identification and standardization of micro-organisms. • Identify and classify microorganisms according to their specific characteristics in the relevant field of Microbiology eg. bacteriology, virology, mycology, and parasitology. • Describe, control and evaluate the growth processes of microorganisms in a bacterial culture. • Describe the essential elements of the microorganisms' pathogenicity, and the host-pathogen interaction. • Describe the methods used for sterilization, disinfection, and antisepsis and understand the policies for sterilization - disinfection use in the Hospital and the community. • List the groups of antibiotics and interpret the antimicrobial spectrum. • Describe the methods of antimicrobial susceptibility testing, synergistic effects and killing-curves of microorganisms. • Describe the phenotypic methods of detecting resistance mechanisms and understand the role of empirical antimicrobial therapy for infections control. • Describe the mechanisms for developing bacterial resistance to antibiotics and contribute to antimicrobial resistance reduction policies. • Describe the main laboratory procedures for diagnosis of infections (microscopy, culture, detection of antigens and antibodies, detection of genetic material, etc.), their applications, their advantages and disadvantages, in relation to the causative agent (microorganism) diseased organ system), the immune status or other epidemiological data of the patient.				

Prerequisites	ABS105	Required	None
Course Content	Theory • Historical background of Microbiology. • Nomenclature, classification, identification and standardization of microorganisms. • Classical (phenotypic) and phylogenetic classification of bacteria. • Sources, transmission modes and bacterial pathogens. • The role and importance of the normal flora of the human body. • Prokaryotic cell structure and functions. • Basic differences between organisms (bacteria, fungi, protozoa, helminths). • Management of biological samples. • Sterilization - Disinfection - Antisepsis. • Microbial kill rate and sterilization quality control. • Bacterial metabolism and growth. Cultures and incubation conditions. Nutrients for microbial growth, quality control. • Methods for cultivating biological specimens. • Conventional and automated bacterial identification methods. • Structure and function of genetic material of bacterial cell. • Genetics of viruses and the contribution of molecular techniques to the diagnosis, prevention and treatment of infections. • Resistance development mechanisms and microbial susceptibility testing methods. • Epidemiology and control of infections in the Community. • Clinical Microbiology Laboratory experiments/exercises: As part of the course, laboratory exercises are carried out on the course material for a better deepening and consolidation of the theoretical part. Indicative exercises are: coatings - Preparations (Fresh - Dry / Direct – Indirect), fundamental stains – Basic stains and Staining Techniques, gram stain, structural and morphological elements of cells (to evaluate slides), receiving and transporting Biological Materials, disinfection – disinfectant. Preparation of bacterial culture media through sterilization procedures and disinfection methods applied in a bacterial lab,microorganism cultures and determination of susceptibility of bacteria.		
Teaching Methodology	The teaching of the course includes lectures to help students understand the theoretical background, and laboratory exercises in order to get a better comprehension of the main concepts of Microbiology. Methods such as discussion, questions/answers, and pros/cons, are used to enhance student's participation. PowerPoint and image-rich material and short animations are used to better understand the content of Microbiology. The laboratory exercises are conducted in the Biology and Biochemistry Laboratory using the appropriate laboratory equipment, under the instructor's supervision. Appropriate preparation and demonstration by the laboratory supervisor precedes each laboratory exercise. Assessment of laboratory exercises includes laboratory reports submitted by each student at the end of each lab exercise.		

Bibliography	Textbooks: • Medical Microbiology: A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Investigation and Control. M. Barer, W. Irving, A. Swann, N. Perera. Elsevier, 19th ed, 2018 • ''Ιατρική Μικροβιολογία'', Τόμος Ι και ΙΙ, 18th ed. D. Greenwood, R. Slack, J. Peutherer, M. Barer. Ελληνική έκδοση 2016, Εκδοτικός Οίκος: Ιατρικές Εκδόσεις Πασχαλίδης. References: • "Hugo and Russell's Pharmaceutical Microbiology", 8th ed., S. Denyer, N. Hodges, S. Gorman, Blackwell Publishing.(2011) • ''Ιατρική Μικροβιολογία'', (2011), P.R. Murray, K.S. Rosenthal, M.A. Pfaller, Εκδοτικός Οίκος: Παρισιάνος Α.Ε.
Assessment	Course Work 40% • Mid-term Test 20% • Lab reports 20% Final Exam 60% For student evaluation, the overall grade is determined by a written midterm exam (20%), a laboratory grade (20%) and a written final exam (60%). The mid-term exam is carried out between the 6th and 8th week and it mainly includes short answer- questions and problem- solving questions and examines specific modules of the course. As far as the laboratory grade is concerned, it comprises of the evaluation of the laboratory reports (60% of the laboratory grade) submitted by the students after every experiment and a final laboratory examination (40% of the laboratory grade) which mainly includes short answer questions and problem-solving questions. In their laboratory reports, students are asked to describe the experimental procedure, to evaluate and analyse their results and to answer specific questions. The following criteria are taken into account when evaluating laboratory reports: (a) experimental data collection (30%), (b) data analysis (40%), and application of theory to draw conclusions (30%). The final exam of the course is carried out during the 14th-16th week of each semester and includes short answer questions, decision questions, and problem-solving questions regarding all course modules. The final assessment of the students is formative and summative and is assured to comply with the subject's expected learning outcomes and the quality of the course.
Language	Greek, English