Course Title	**Molecular Virology**				
Course Code	ABS307				
Course Type	Compulsory				
Level	BSc (Level 1)				
Year / Semester	3rd / 5th				
Teacher's Name	Dr Sophia Kyradji, Dr Stavroula Gouzelou				
ECTS	6	Lectures / week	3	Laboratories / week	2
Course Objectives	Molecular virology is the study of viruses and virus infection at the level of nucleic acids and proteins. The main objective of this course is to provide students with knowledge on the fundamentals of viruses and how they establish infection within the host cell. Although this course will cover the immune response to viruses to some extent, its focus will be the virus aspect of infection. Finally, this course aims to provide examples of common human virus pathogens, treatment options and in particular the rationale behind vaccine design.				
Learning Outcomes	At the completion of this course students are expected to: • List and describe the taxonomic subdivision of viruses. • Be able to describe the basic structure of viruses and the key differences between virus families. • Understand the intracellular infection mechanisms of viruses, as well as the key differences of these between different virus types. • Understand the cell processes disrupted and usurped during virus infection, as well as the key immune responses elicited at the cellular and whole organism level. • Understand viral evolution mechanisms, and how they contribute to the emergence of viral spread. • Describe the course of action of antiviral treatments, the rationale of different vaccine designs against viruses and how we can be best prepared for newly emerged viruses. • Gain practical experience on basic molecular virology techniques and molecular detection methods.				
Prerequisites	ABS210	Required	-		
Course Content	Theory: • History of virus discovery and virology. • Classic taxonomy and major classification of viruses. • Virus genomes and structures. • The viral replication cycle (broken down into several lectures covering attachment, entry, RNA synthesis, replication, protein synthesis, assembly and release). • Effects of virus infection on intracellular processes. • Viral pathogenesis and host immune responses.				

	• Acute and persistent viral infections, along with their long-term effects on the organism. • Antiviral treatments and vaccines. • Important human pathogenetic viruses. • Viral evolution, zoonotic viruses, emerging viruses and pandemics. <u>Laboratory exercises:</u> • Disinfection and sterilisation methods. • Introduction to mammalian cell culturing. • Virus hemagglutination assays. • Virus plaque assays. • Nucleic acid isolation. • Polymerase chain reaction (Standard and Real-time).
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 clinical collaborating laboratories 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	<u>Textbooks:</u> 1.Principles of Molecular Virology, 6th Edition 2015, Alan Cann Paperback ISBN: 9780128019467 2. Molecular Virology, by Susanne Modrow, Dietrich Falke, Uwe Truyen and Hermann Schatzl <u>References:</u> A list of recent articles will be selected for further reading.
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