



UNIVERSITY OF NICOSIA

ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

University of Nicosia, Cyprus

Course Code BIOL-481	Course Title Viruses and Human Diseases	ECTS 6
Department Life and Health Sciences	Semester Fall and Spring	Prerequisites BIOL-251 Introduction to Microbiology and Virology
Type of Course Elective	Field Biology	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 3 rd or 4 th	Lecturer Dr. George Krashias
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

This course aims to provide students with an integrated and more advanced understanding of viruses. The main objectives of this course are to:

- Provide an in depth knowledge on the structure and diversity of viruses and the cell/molecular aspects of viral replication.
- Cover the pathogenic effects and pathways of infection of viruses.
- Discuss in detail the factors that determine host interactions and the host defense mechanism and how these relate to human diseases.
- Highlight specific topics of current public and medical interests related to viral diseases.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Discuss the ecology and diversity of viruses including emerging viruses.
2. Explain how viruses with different genomes replicate.
3. Describe viral structures and mechanisms of expression of viral proteins.
4. Appraise the effects of viruses on normal cell function and discuss virus pathogenicity and the factors that determine virus host range.
5. Identify and describe host defense responses and explain the mechanisms used by viruses to avoid host defense.
6. Use specific diseases to explain virus pathogenicity and diagnostic methods.
7. Appraise the ethics and potential strategies to control viral infections and

newly emerging viruses.

Course Contents:

1. Viruses and Host Cells; prehistory, discovery.
2. Properties of viruses, structure, classification and unifying principles.
3. Virus Cultivation, Detection and Genetics.
4. Getting In: Attachment, Penetration, and Uncoating.
5. Expression and Replication in Prokaryotic Hosts.
6. Expression and Replication in Eukaryotic Hosts: The RNA Viruses; Retroviruses and Retroviral reverse transcription.
7. Expression and Replication in Eukaryotic Hosts: The DNA Viruses; mechanisms of viral DNA synthesis.
8. Processing of viral pre-mRNA and mRNA turnover, posttranscriptional regulation of gene expression, translational control and viral strategies.
9. Assembly, Maturation, and Release of Virions.
10. Effects of Viral Infection on Host Cells: Cytological and Inductive Effects.
11. Viruses and Disease; Prevention and control.
12. Subviral Entities, Viral Evolution, and the emergence of new viruses.

Learning Activities and Teaching Methods:

Lectures; Discussions of literature papers, Cooperative learning exercises

Assessment Methods:

Test, Exams, Assignments, Oral presentations

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
1 James H. Strauss Ellen G. Strauss	Viruses and Human Disease	Academic Press	2007, 2 nd ed.	ISBN: 0123737419

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
1. John Carter Venetia Saunders	Virology: Principles and Applications	Wiley	2007, 1 st ed.	ISBN-10: 0470023872
2. Nicholas H. Acheson	Fundamentals of Molecular Virology	John Wiley & Sons, Inc.	2006, 1 st ed.	ISBN: 0471351512

3. Nigel Dimmock Andrew Easton Keith Leppard	Introduction to Modern Virology	Wiley-Blackwell;	6 th ed. 2007,	ISBN: 140513645 6
Current Scientific Literature on advancements in the understanding of viral infection and viral diseases.				