



UNIVERSITY OF NICOSIA ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

University of Nicosia, Cyprus

Course Code BIOL-201	Course Title Cell Biology	ECTS Credits 6
Department Life and Health Sciences	Semester Spring/Fall	Prerequisites BIOL-102 General Biology II
Type of Course Required	Field Biology	Language of Instruction English
Level of Course Undergraduate	Year of Study 2 nd	Lecturer Dr. Evi Farazi Dr. Kyriakos Felekkis
Mode of Delivery Face to Face	Work Placement N/A	Co-requisites None

Objectives of the Course:

This course aims to provide a thorough introduction to cell biology

The main objectives of this course are to:

- Provide students with knowledge regarding the composition and function of the various sub-cellular structures and organelles of the cells.
- Develop students' awareness of the way information is relayed within cells and between cells.
- Provide students with a conceptual framework of the identity and function of cellular macromolecules in various cell processes cell growth and cell apoptosis.
- Develop students' understanding of the processes and pathways that control gene expression at the DNA and protein level
- Provide an overview of the role of mitochondria and bioenergetics in cellular processes
- Encourage individual and interactive life-long learning skills.

Learning Outcomes:

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

1. Discuss and compare the composition and functions of sub-cellular structures and organelles inside eukaryotic cells and explain the relevance of their function to cell physiology.
2. Identify the ways that proteins are synthesized, transported and degraded.
3. Differentiate the type of receptors and signal transduction mechanisms used to

communicate information inside cells and between cells and identify the major players involved.

4. Explain the basic events of the cell cycle, how it is regulated and related to apoptosis.
5. Discuss the mechanisms used for control of gene expression and gene silencing.
6. Underline the major differences regarding the function and characteristics of cell types
7. Discuss the molecular basis of various cellular processes such as migration, apoptosis, cell proliferation, adhesion.
8. Describe principles of aerobic respiration with respect to cellular function

Course Contents:

1. The cytoskeleton and the cell surface
2. Protein synthesis, sorting and transport
3. Protein functions (signals, structural, Ab, Enzymes: proteases, kinases, lipases etc.)
4. Microtubules, Intermediate filaments, Actin/Myosin
5. Cell contraction, locomotion,
6. Cell junctions, cell adhesion, cell migration and extracellular matrix
7. Receptors and Signal transduction mechanisms (GPCR, kinase receptors, other)
8. Regulation/regulators of transcription
9. Regulation/regulators of translation
10. The Cell Cycle
11. Cell growth, cell proliferation regulation
12. Cell death/apoptosis
13. Types of cells and their function
14. Stem cells
15. Mitochondria and bioenergetics

Learning Activities and Teaching Methods:

Lectures; discussions session, independent study and review sessions

Assessment Methods:

Assignments, Tests and Mid-term Exam; Final Exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Jeff Hardin, Gregory Bertoni, Lewis J. Kleinsmith	Becker's World of the Cell	Pearson	2012	ISBN-10: 0321709780 ISBN-13: 9780321709783

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
O'Connor, C. M. & Adams, J. U.	Essentials of Cell Biology	NPG Education	2014	E-book available: http://www.nature.com/scitable/ebooks/essentials-of-cell-biology-14749010