

Course unit title:	Cell Biology and Genetics		
Course unit code:	NUR112		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1 st cycle)		
Year of study:	1		
Semester when the unit is delivered:	2 (Spring)		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Dr Pantelidou Maria		
Learning outcomes of the course unit:	<ol style="list-style-type: none"> 1. Describe the basic cell biology principles 2. Describe the chemical composition of the cell 3. Describe the cytoskeleton and cell movement 4. Explain the genetic basis of various diseases and the impact of Genetics in disease diagnosis, prevention and treatment 5. Extract conclusions from data 		
Mode of delivery:	Face to face		
Prerequisites:	None	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> ● Introduction to cell structure: Types of cells: Eukaryotic and prokaryotic cells. Comparison of cells. Observation of cells under the microscope. ● Chemical composition of cells: Biological molecules of the cell. Protein structure and function ● Internal cellular organelles ● Energy production in cells: Mitochondria and cell respiration (oxidative phosphorylation). Chloroplasts and photosynthesis ● Cell membrane - Cytoskeleton: Structure and permeability. Membrane proteins. Intracellular transfer. Cell communication ● Cell cycle: Mitosis and meiosis. Cell death ● The genetic code: DNA structure and function. DNA replication and repair. Transcription (DNA to RNA) and translation (RNA to protein). Chromosomes, genes and regulation of gene expression. Genetic diversity. Genetic diseases and chromosomal abnormalities. Cancer and oncogenes ● DNA technology: DNA analysis. Research in biomedical sciences. Gene therapy. Cloning. Genetic mechanisms <ul style="list-style-type: none"> ▪ Laboratory: Bacteria. E.coli culture. Microscopy. Observation of different types of cells under the microscope. DNA extraction from plant tissue. Exercises for understanding of DNA structure and the processes of DNA replication, transcription and translation 		
Recommended and/or required reading:			

Textbooks:	<p>1. “Βασικές Αρχές Κυτταρικής Βιολογίας“, Τόμος Ι και ΙΙ (2015) Συγγραφείς: B. Alberts, D. Bray, K. Hopkin, A. Johnson, J. Lewis, M. Raff, K. Roberts, P. Walter. Εκδοτικός Οίκος: Ιατρικές Εκδόσεις Πασχαλίδης.</p>
References:	<p>1. “Βιολογία” (2013) Συγγραφείς: Jane B. Reece, 1946-2004 Neil A. Campbell. Εκδοτικός Οίκος: Πανεπιστημιακές Εκδόσεις Κρήτης.</p> <p>2. “Συνοπτική Κυτταρική Βιολογία” (2002) Συγγραφείς: Αικ. Χαρβάλου, Δ. Πήγγης, Δ.Κ. Φιλίππου, Γ. Τρίγκας. Εκδοτικός Οίκος: Ιατρικές Εκδόσεις Πασχαλίδης.</p> <p>3. “Βιολογία-Η Μελέτη της ζωής” (2004) Συγγραφείς:Ε. Αλεξανδρή-Χατζηαντωνίου Εκδόσεις Σταμούλη</p> <p>4. “Σύγχρονη Κλινική Γενετική” (2010) Συγγραφείς: A. Read. Εκδοτικός Οίκος: Ιατρικές Εκδόσεις Πασχαλίδης.</p>
Planned learning activities and teaching methods:	<p>The course is delivered to the students by means of lectures, conducted with the help of computer-based presentations. Lecture notes and presentations are available through the web for students to use in combination with the textbooks. The evaluation of the laboratory experiments and exercises was performed with the completion of special questionnaires. Before each laboratory exercise the lecturer was preparing and demonstrating the experiment</p>
Assessment methods and criteria:	<ul style="list-style-type: none"> • Participation: 10% • Test: 30% • Laboratory: 10% • Final Exam: 50%
Language of instruction	Greek
Work placement(s):	No