UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
BIOL-101	General Biology I	6
Prerequisites	**Department**	**Semester**
None	Life Sciences	Fall
Type of Course	**Field**	**Language of Instruction**
Required	Biology	English
Level of Course	**Lecturers**	**Year of Study**
1st Cycle	Dr Stella Nicolaou (lectures) Dr Mary Halebian (laboratory)	1st
Mode of Delivery	**Work Placement**	**Corequisites**
Face-to-face	N/A	None

Course Objectives:

The main objectives of the course are to:

- introduce students to the basic principles of Biology (The Science of Living beings). The course also aims to allow students to practice hands-on basic laboratory and problem solving techniques and report scientific conclusions following the Scientific Method.

Learning Outcomes:

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

1. Define the chemical structure of basic biological macromolecules.
2. Define the structure and function of cell membranes and organelles and compare prokaryotic and eukaryotic cells.
3. Discuss and explain cellular respiration and photosynthesis.
4. Discuss cell growth and reproduction and identify the basis of genetic inheritance.
5. Identify key AI technologies currently used in biological sciences.
6. Discuss the scientific method and to analyse how one arrives at scientific conclusions.
7. Practice basic laboratory skills and to prepare a formal laboratory report.

Course Content:

1.	Introduction to the Science of Life, Levels of Organization LAB: Introduction and Laboratory Safety Issues
2.	The chemical basis of life LAB: The process of Scientific Inquiry: The elements of an experiment
3.	Properties of Water, pH, pKa, Acid/bases LAB: Use of the Microscope
4.	Structure function of macromolecules in the living cell LAB: Biomolecules: Qualitative determination of Sugars, Lipids, Proteins & DNA.
5.	Prokaryotic vs. Eukaryotic cells: cellular organelles: structure vs. function.
6.	Membrane structure and function; cell communication. LAB: Cell structure and Function: Osmosis
7.	Laws of Thermodynamics, ATP regeneration, Enzyme Activity, Feedback Inhibition LAB: Cell metabolism: Effect of pH and temperature on the enzyme activity
8.	Cellular respiration, electron transport and oxidative phosphorylation. LAB: Respiration: Alcohol fermentation
9.	Photosynthesis; the light and dark reactions. LAB: Photosynthesis: Isolation & characterisation of leaf pigments
10.	Cell Reproduction: Cell Cycle. / Mitosis vs Meiosis. LAB: Mitosis.
11.	AI in Biological Sciences

Learning Activities and Teaching Methods:

BIOL-101 (Lectures): 3hours/week; (Laboratory Sessions): 2hours/week, Tutorials; Cooperative and independent learning, Videos and animations

Assessment Methods:

Midterm, final and lab reports.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Biology: A Global Approach, Global Edition, 12th edition	N.A. Campbell and J.B. Reece	Pearson	2021	**ISBN-13:** 9781292341637

BIOL 101 Laboratory Manual	Kyriacos Felekkis & Gregoris Papagregoriou	University of Nicosia	2017	

Recommended Textbooks / Readings:

Title	**Author(s)**	**Publisher**	**Year**	**ISBN**
General Biology	Bishoyi, Ashok Kumar, editor	Delve Publishing	2021	*E-book available
On the Origin of Species: By Means of Natural Selection	Charles Darwin	The Floating Press	2009	*E-book available

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