Course Syllabus

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>ECTS Credits</th>
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<tbody>
<tr>
<td>BIOL-101</td>
<td>General Biology I</td>
<td>6</td>
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**Prerequisites**
A-level High-School Biology or a Biology-110 Foundation Course

**Department**
Life and Health Sciences

**Semester**
Fall

**Type of Course**
Required

**Field**
Biology

**Language of Instruction**
English

**Level of Course**
1st Cycle

**Lecturer(s)**
Dr Stella Nicolaou

**Year of Study**
1st

**Mode of Delivery**
Face-to-face

**Work Placement**
N/A

**Corequisites**
None

Course Objectives:

The main objectives of the course are to:

- Make students aware of the diversity/complexity of organisms, the major categories of biological molecules and their basic functions.
- Describe the structure-function of cell organelles and demonstrate the differences between prokaryotic and eukaryotic cells.
- Demonstrate the energy requirements of organisms through the study of energy pathways such as photosynthesis and respiration.
- Make students aware of the biological processes of cell division, reproduction and genetic inheritance.
- Provide students the opportunity to study the scientific method through experiments and to practice problem solving techniques.
- Provide students the opportunity to practice on basic laboratory equipment, to collect metric measurement, report data and interpret results accurately.
Learning Outcomes:

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

1. Identify basic biological macromolecules from their chemical structure and name their basic function.
2. Define the basic structure and function of cell membranes and organelles and compare prokaryotic and eukaryotic cells.
3. Explain how organisms derive and utilize energy through photosynthesis and cellular respiration.
4. Explain cell division and identify the basis of genetic inheritance.
5. Apply the scientific method to collect and interpret experimental data, propose scientific conclusions and write a formal laboratory report.
6. Use basic laboratory equipment and work with others.

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 and DNA.
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 on the enzyme activity
   LAB: Cell metabolism: Effect of 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 of leaf pigments; Absorption spectra of leaf pigments
11. Mitosis vs Meiosis.
   LAB: Mitosis

Learning Activities and Teaching Methods:

Lectures, Laboratory Sessions, Group learning, discussions.
Assessment Methods:

| Laboratory reports/exams, Mid-term Exams, Final Exam |

Required Textbooks / Readings:

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<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Publisher</th>
<th>Year</th>
<th>ISBN</th>
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<tbody>
<tr>
<td>Biology Laboratory Manual</td>
<td>Koptides M. and Kastanos E</td>
<td>University of Nicosia</td>
<td>2009</td>
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Recommended Textbooks / Readings:

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