

Date: July 2025

Syllabus - Teaching Program for the Course

**Intro. to Biology**

**Elisheva Abberbock|** **Faculty of life sciences**Course No

80-055-01

80-056-01

|  |  |
| --- | --- |
| **Course Type:** |  Frontal lecture  |
| **Scope of credits:** | 3 |
| **Year of study:** | 2025-26 |
| **Semester:** | Fall & Spring |
| **Day & Time:** | Wed. 12:00-2:00 |
| **Reception Time:** | Office hours Sunday and Thursday from 10:00-12:00  |
| **Lecturer Email:** | Elisheva.abberbock@biu.ac.il |
| **Moodle Site:** |  |

**Course description and learning goals**

**Course Abstract**

This lecture course introduces students to the major themes and discoveries of modern biology, from the molecular building blocks of life to the structure of ecosystems. This course will also aim to tell the story of biology as a living, evolving science. In addition to the biology, we will explore the process and history of biological thought, examine the experiments and scientists that changed the field, and explore how today’s research builds on these foundational discoveries. The goal is for students to come away both with a strong understanding of biological principles, and with an appreciation for how ideas have developed over time and continue to shape the world of science today.

**Learning objectives**

By the end of this course, students will have a strong grasp of fundamental biological principles, including topics such as cell structure, genetics, physiology, development, and ecology. Emphasis will be placed on real-world applications of biology, including topics such as nutrition, cancer therapies, gene editing technologies, and viruses, helping students understand the relevance of what they’re learning to the real world. Students will build the skills to read and make sense of scientific papers, to understand how research is structured, how data is presented, and how conclusions are drawn. By exploring the history of biological ideas, we will learn about of the problems that existed in science and the problems that still exist today.

**Skills**

1. Students will have practical sufficiency in analyzing graphs and data sets, including identifying faulty graphs, keeping in mind presentation types, axis definition, statistical significance and outliers.
2. Students will evaluate scientific papers and have a sufficient understanding of paper outline models and how to establish reliable vs unreliable information.
3. Students will have a sufficient understanding of many essential biological principles and how those translate to modern applications.

**Active learning –** **lessons plan:**

Special active learning assignment: Students will be required to select a TED talk related to science topics covered in the course and present a 6 minute presentation in a style of their choosing to strengthen skills related to internalization of material, presentation building and public speaking.

General course lesson syllabus:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lesson No. | Topic | Active learning | Required reading | Assessment  |
| 1+2+3 | • Cellular structure and function o Chemical context of life o Cell membranes and organelles o Unique structures to meet diverse functions |  |  |  |
| 4+5+6 | • Organic Macromolecules- cross section of science and nutrition o Carbohydrateso Lipids o Nucleic acids o Proteins |  |  |  |
| 7+8 | • Cell metabolism o Respiration o Fermentation o Photosynthesis |  |  |  |
| 9 | • Viruses o What are viruses?o Are viruses alive? o History and diversity |  |  |  |
| 10 | • SARS-CoV2 Corona virus o History o Uniqueness o Mechanism |  |  |  |
| 11 | • DNA and inheritance o Cell cycle o Heredity o Can memories be inherited? o Genomics and sequencing o Genetic diseases and their treatments |  |  |  |
| 12 | • CRISPR genome editing o History o What is ito Scientific application o Therapeutic applications |  |  |  |
| 13+14 | • Cancer o What is cancer?o Why haven’t we cured it?o History of cancer therapies- chemo and immune therapies o Novel cancer therapeutics |  |  |  |
| 15 | • Ecologyo What is global warming?o Global processes that maintain environmental integrity |  |  |  |

(In a course that lasts a whole year, the additional sessions should be added)

\* There may be changes in the syllabus depending on learning progress and effectiveness

**Final grade**

**Formative assessment:** Students will participate in a Kahoot based quiz before every lecture. The material will comprise of topics covered in the pervious lecture.

**Midterm:** Midterm will be a halfway exam that comprises of 20% of the final grade

**Final exam:** Final exam will comprise of 70% of the final grade

**TED talk presentation:** Will comprise of 10% of the final grade

**Passing grade:** 65

**Course** requirements

Attendance is mandatory.

All students must take all quizzes and finals

All students must participate in Kahoot quizzes and TED presentations

 **Prerequisites**

No Prerequisites required



**Bibliography: Up-to-date** **reading, viewing, and listening content items**

The course will not follow a specific textbook, but students may find the following text books helpful

Molecular Biology of the Cell Seventh Edition

Campbell Biology (11th Revised Edition)