October 2022

BIO301E FUNDAMENTALS OF BIOLOGY COURSE REPORT (2017-2022)

BIO301E course is designed to inform students from different departments about the fundamental topics of biology. The topics include basic properties of life and living cell, structure and function of macromolecules, cellular structure, organelle and membrane structures and their functions, cell metabolism, cell cycle, meiosis and mitosis, molecular and chromosomal basis of inheritance, basic genetics and laws of inheritance, evolution and molecular biology.

During the course, students are also introduced to current issues concerning life in the world. Among these are issues that affect all life in the world such as global warming, pandemic, biodiversity problem, sustainability, energy problem. It is aimed that students acquire basic and up-to-date information about life and the world. In addition, each student is expected to make connections between their departments and fields of study and life sciences. Students are encouraged to design projects related to life and biology as graduation projects.

The Department of Molecular Biology and Genetics has given BIO301E courses every Fall and Spring semesters with 2 sessions; students are free to register for any session of their required course regardless of their department and program. Students must attend the session for which they are registered. A minimum of 70% attendance is required. Periodic attendance checks are taken in class. A student who is absent for 5 or more lectures (out of 14 lectures) gets VF (fails without final exam). Students are also required to have at least 30 out of 100 from the in-term assessments to have the final exam (otherwise get a VF grade). The examination dates are also specified at the beginning of the semester and announced within the course syllabus. The midterm exams and final are common to all of the sessions of the course and the midterm exams are held after the lecture hours. In this way the lecture hours during the week of the exam are not lost for the exam.
All the students registered in the course, regardless of their course language, take the same midterm and final exam on the same day and at the same time.

Both midterm and final exams contain multiple-choice test part, fill in the blank part and paragraph /assay questions. The exams usually contain 25-35 questions.

IMPROVEMENTS

PRE-PANDEMIC PERIOD (2017-2019)

BIO301E course is an elective course. Since the course is preferred by many students at the beginning of each semester, the number of semesters and sections in which the course is given has been increased since 2017. The course has been given every Fall and Spring semesters with 2 sessions.

In addition, the number of departments that can take the course has been increased. In order for a large number of students to take the course, two sections are held at different times. Each year, the course quota has been increased (Table 1).

Table 1: Total number of students in BIO301E course.

2017-2018 Fall	106
2017-2018 Spring	138
2018-2019 Fall	133
2018-2019 Spring	119
2019-2020 Fall	185
2019-2020 Spring	144
2020-2021 Fall	142
2020-2021 Spring	298
2021-2022 Fall	127
2021-2022 Spring	111

Ninova education website was used to teach the course. It is a web based electronic learning platform to support class room education through electronic messaging, publishing announcements, assignments, events and notes on Ninova.
https://ninova.itu.edu.tr/en/

PANDEMIC PERIOD (2020-2021)

During the pandemic period, we switched from face-to-face education to online education. The zoom platform was used to give the lessons. Especially in the 2020-2021 semester, the class quota was increased so that many students could take the course. At the beginning of the pandemic, exams were held using the surveys on the zoom platform. In the following period, the Ayva website was used for exams.
https://ayva.itu.edu.tr/

POST-PANDEMIC PERIOD (2022)

In 2021-2022 Spring semester, face-to-face education has started to be given again. In 2021-2022 spring semester, the courses continued to be given online, while the exams were started to be held face-to-face. In 2022-2023 fall, face-to-face education was introduced in courses and exams.

In order to represent the classes equally, a student number quota was applied to the departments. In this way, certain departments were prevented from filling the class quota.

Current topics continue to take place frequently in our lessons. We often talk about issues related to the pandemic, vaccines, antibiotic resistance, global warming, water shortage, biodiversity crisis and human evolution.

In the last few years, we have an additional activity in the lessons. Every semester, I bring around 20-30 popular science books to the class and briefly introduce them. These books generally cover topics such as life and the history of life, evolution, ecology, sustainability and biodiversity.

In general, we want to increase their awareness of the current issues we are talking about.

CHANGE IN STUDENT GRADES BY YEARS

Before the pandemic, it is seen that the average grade for both groups varied between 50-60. However, during the pandemic period, with the transition to online education, the class average increased above 75. After the pandemic, especially with the re-application of face-to-face exams, the average grade came back to the range of 50-60 (Table 2).

Table 2: Average grades for both BIO301E sections from 2017 to 2022.

	Section 1	Section 2
2017-2018 Fall	58,1	53,4
2017-2018 Spring	60,4	60,2
2018-2019 Fall	58,2	56,0
2018-2019 Spring	55,7	52,3
2019-2020 Fall	62,6	61,1
2019-2020 Spring P	54,8	54,8
2020-2021 Fall P	76,7	79,3
2020-2021 Spring P	76,9	78,4
2021-2022 Fall	49,0	50,6
2021-2022 Spring	51,8	53,5

BIO301E COURSE OUTLINE

Here is the outline of the course which is followed over years with minor modifications

Fundamentals of Biology (BIO301E)

Instructor: Dr. Deniz Şahin (sahinden@itu.edu.tr)
Textbook: Biology, Campbell, Reece, 9th and 10th E.
Course Evaluation: 2 Quiz Exams, 1 MT, 1 Final Exam

Final Grading:
Semester Activities (QE+MT): 20+35=55%
Final Exam: 45%

Midterm Date: 16.11.2022 at the classroom.

VF Criteria:
- If you get <30% of Semester Activities: VF
- <70% attendance: VF
Please Follow the Ninova page!
Course Outline:
1. Introduction to Biology (Chapter 1)
2. The Chemistry of Life (Chapter 2)
3. The Structure and Function of Large Biological Molecules (Chapter 5)
4. The Cell (Chapter 6)
5. Membrane Structure (Chapter 7)
6. An Introduction to Metabolism (Chapter 8)
7. The Cell Cycle (Chapter 12)
8. Meiosis and Sexual Life Cycles (Chapter 13)
9. Mendel and the Gene Idea (Chapter 14)
10. The Chromosomal Basis of Inheritence (Chapter 15)
11. The Molecular Basis of Inheritence (Chapter 16)
12. From Gene to Protein (Chapter 17)
13. Descent with Modifications: A Darwinian View of Life (Chapter 22)
14. The Evolution of Populations (Chapter 23)15. The Origin of Species (Chapter 24)