



**"ISMAIL QEMALI" UNIVERSITY, VLORE**  
**FACULTY OF TECHNICAL AND NATURAL SCIENCES**  
**DEPARTMENT OF BIOLOGY**

**APPROVED**  
**Head of the Biology Department**  
**Dr. Aurora BAKAJ**

**COURSE PROGRAM BIO 450 Projects in biology**

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| <b>SUBJECT:</b>                                    | Projects in biology   |
| <b>Head/Teacher of the course:</b>                 | Dr. Ina Nasto   |
| <b>Charge:</b>                                     | 1 hour lecture / 2 hours laboratory   |
| <b>Subject typology:</b>                           | Discipline of integrative / interdisciplinary subjects  |
| <b>Academic year/semester when it takes place:</b> | Year II - Semester I / Autumn 2020  |
| <b>Subject type:</b>                               | Mandatory   |
| <b>Study program:</b>                              | Master's Professional Teacher AM in Biology with Minor Profile Chem   |
| <b>Credits:</b>                                    | 4 Credits   |
| <b>Subject code:</b>                               | BIO 450   |
| <b>E-mail address of the holder/pedagogue:</b>     | <a href="mailto:ina.nasto@yahoo.com">ina.nasto@yahoo.com</a> / <a href="mailto:ina.nasto@univlora.edu.al">ina.nasto@univlora.edu.al</a> |

**summary AND LEARNING OUTCOMES:**

Projects in biology aims to prepare future biology teachers, both at a technical and scientific level, for teaching practical lessons of the subject of biology. The course is organized according to the high school biology curriculum. The objectives of this course are to bring future biology teachers closer to the organization of practical lessons, the establishment and enrichment of a didactic laboratory in biology and the establishment of laboratory experiments and scientific and theoretical projects in the subject of biology.

**BASIC CONCEPTS:**

- 1 The practical training of teachers in the construction of a didactic laboratory
- 2 The establishment and design of teaching laboratory works according to the didactic program of biology and chemistry
- 3 Organization of work in groups and projects in biology.

**COURSE TOPICS:**

Topics to be covered in the lectures:

- Topic 1** Introduction, Rules for building a didactic laboratory, planning a diary for the laboratory.
- Topic 2** Construction of a didactic laboratory, necessary material, way of organizing a laboratory. Security.
- Topic 3** Acquaintance with the students' didactic program and with the requirements in the laboratory for the
- Topic 4** Practical skills in invertebrate and vertebrate zoology, creation of projects in the subject of zoology.
- Topic 5** Construction of didactic material for zoology classes, construction of experiments.
- Topic 6** Practical training in Botany. Creation of projects and experiments in botany.
- Topic 7** Construction and collection of didactic material for the enrichment of the biology laboratory.
- Topic 8** Practical skills in microbiology and biochemistry. Construction of three-dimensional models of cells and

- Topic 9** Organizing projects with the class to build 3-dimensional models. Preparation of permanent preparations for
- Topic 10** Practical skills in Histology and physiology. Preparation of ready-made preparations for the histology subject,
- Topic 11** Raising the necessary didactic material for the explanation of lessons in histology and physiology.
- Topic 12** Practical training in Anatomy, and the construction of three-dimensional anatomical models for teaching.
- Topic 13** Projects in the subject of anatomy. Practical training of students in the construction of anatomical schemes.
- Topic 14** Practical ability in Ecology. Setting up laboratory experiments on ecosystems and successions.
- Topic 15** Preparation of models of food chains, Pollution of the environment, effects of pollution in a microcosm.

**Topics to be covered in the laboratories:**

- Topic 1** Acquaintance with an unorganized laboratory in one of the city's schools, cataloging the laboratory tools, and organizing according to the rules of the tools present.
- Topic 2** Establishing a work plan for the regulation and enrichment of the didactic laboratory of the school according to the teaching program of the subject of biology.
- Topic 3** Collection of laboratory protocols on each program, writing a laboratory guide for all biology topics, for the teacher and the student.
- Topic 4** Collection and preservation of invertebrate zoological material, drying and raising of zoological materials.
- Topic 5** Setting up projects with students, putting them into practice, engaging students in the reconstruction of the laboratory.
- Topic 6** Collection and storage of material for the realization of botany lessons. Construction of herbariums.
- Topic 7** Preservation of dried fruits, leaves, seeds and permanent preparations on plant anatomy.
- Topic 8** Construction of permanent preparations according to protocols for microbiology.
- Topic 9** Gram staining, construction of three-dimensional structures of organelles such as nuclear membrane, cells, DNA, Organelles, etc.
- Topic 10** Observation in the microscope, rules of observation and maintenance of the device. Maintenance of permanent preparations
- Topic 11** Construction of permanent histopathological preparations, tissue staining. Setting up experimental projects on physiology, organizing a laboratory lesson on physiology.
- Topic 12** Setting up an aquatic microcosm and a terrarium.
- Topic 13** Observation of the impact of pollutants on plant growth and development.
- Topic 14** Observation of successions in an aquatic or terrestrial microcosm. Winogradsky column, observation of a bacterial ecosystem. Pollutants and their cycle in nature.

**FORM OF KNOWLEDGE CONTROL**

| control  | Percentage assessment |
|--|-----------------------|
| Annual assessment Seminars and teaching practice | 20%                   |
| Final check                                      | 80%                   |

**ATTENDANCE:**

The student, who results in less than 75% attendance for the period that belongs to each partial exam, the period for which he will be tested, will not be included in the relevant exam, will be evaluated with M.

If the student has attended the course, but does not appear in the next exam, he is assessed NP (Did Not Appear).

**COURSE FORMAT:**

The subject will be evaluated on the basis of two partial exams, assignments and the final exam. Points earned will be cumulative. The exams will not be repeated, for any reason. If you miss an exam without any major reason, then you will lose points for that exam that you did not appear for.

**COMMUNICATION:**

Homework exercises, course assignments and any other announcements will be given in class or at the official address of the "Ismail Qemali" University of Vlora on the Internet: [www.univlora.edu.al](http://www.univlora.edu.al) at the teacher's e-mail address [ina.nasto@univlora.edu.al](mailto:ina.nasto@univlora.edu.al).

**Email:** It is the duty of every student to check e-mail regularly. There will be tasks and notifications will be given only via e-mail.

**HONESTY CODE:**

Students are encouraged to work in groups for the exercises and tasks that are given to them. Copying from one another in exams, course assignments, homework, etc. is not allowed. Violation of this rule will be accompanied by punitive measures up to the expulsion of the student from the university.

**LITERATURE**

**a)Mandatory basic literature:**

Cycle of Lectures: Ina Nasto 2020-2021

**b) Recommended literature:**

Robert Bruce Thompson & Barbara Fritchman Thompson (2012),  
Illustrated Guide to Home Biology, ISBN:978-1-449-39659-6

Ethel Hanauer (1962), BIOLOGY FOR CHILDREN

Helms DR, Helms CW, Cummings JC (1997), Biology in the  
Laboratory

**FINAL REMARKS FROM THE SUBJECT TEACHER**

Homework exercises, coursework and any other notices will be given in class.

Students are also encouraged to work in groups for the homework exercises. Copying from one another in exams, coursework, homework, etc. is not allowed. Violation of this rule will be accompanied by punitive measures up to expulsion from the university.

The use of mobile phones and smoking in the auditorium is not allowed.

**SUBJECT TEACHER**

**Dr. Ina Nasto**

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<https://www.scienzeascuola.it/laboratorio/biologia?start=21>

<https://phet.colorado.edu/en/simulations/filter?subjects=biology&sort=alpha&view=grid>