# COURSE OUTLINE

## (1) GENERAL

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>NATURAL SCIENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACADEMIC UNIT</td>
<td>BIOLOGY</td>
</tr>
<tr>
<td>LEVEL OF STUDIES</td>
<td>UNDERGRADUATE</td>
</tr>
<tr>
<td>COURSE CODE</td>
<td>ΒΙΟ ΣΤΕ7</td>
</tr>
<tr>
<td>SEMESTER</td>
<td>6/8</td>
</tr>
</tbody>
</table>

### INDEPENDENT TEACHING ACTIVITIES

<table>
<thead>
<tr>
<th>Activities</th>
<th>WEEKLY TEACHING HOURS</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures, seminars, and Multimedia displays</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Laboratory work &amp; exercises</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Educational field–work</td>
<td>1 daily excursion</td>
<td></td>
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</tbody>
</table>

Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).

### COURSE TYPE

Field of Science

### PREREQUISITE COURSES:

The students should possess basic knowledge provided through the previously taught theoretical courses ‘Plant Biology’, ‘Ecology’ and ‘Evolution’

### LANGUAGE OF INSTRUCTION and EXAMINATIONS:

Greek. Teaching may be however performed in English in case foreign Erasmus students attend the course.

### IS THE COURSE OFFERED TO ERASMUS STUDENTS

Yes

### COURSE WEBSITE (URL)

https://eclass.upatras.gr/courses/BIO357/

## (2) LEARNING OUTCOMES

### Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

By the end of this course the student will be able to:

1. Understand the basic principles and processes of speciation, as well as the reasons underlying the creation of endemism, diversity and biogeographical patterns on a global and local scale
2. Understand the fundamentals of conservation biology and the relevant risk categories of the rare, protected, threatened and endangered plant taxa
3. Understand how many endemic plant taxa exist in Greece, if there are any endemic diversity
hotspots in Greece, where are these hotspots located and the reasons why they were created
4. Distinguish the rare, threatened and protected plant taxa of Greece
5. Handle the most recent and widely used protocols for the monitoring of rare, protected and endangered species
6. Perform a Population Viability Analysis, as well as to determine the size of the Minimum Viable Population
7. Estimate the extinction risk of rare, endemic and protected plant taxa via a Species Distribution Modelling framework
8. Apply the ecological principles in environmental assessment and management of environmental issues
9. Evaluate the biodiversity conservation as well as the climate change results in ecosystems and natural environment
10. Strengthen their efficiency to compile information in a coherent system/unit

At the end of this course the student will have further developed the following skills/competences:

1. Ability to demonstrate knowledge and understanding of essential facts, concepts, principles and theories of Ecology, Evolution, Conservation Biology and Biogeography
2. Ability to apply such knowledge and understanding to the solution of ecological issues
3. Ability to interact with others on environmental multidisciplinary problems
4. Study skills needed for continuing professional development

General Competences
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamwork
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas

Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others...

Generally, by the end of this course the student will, furthermore, have develop the following general abilities (from the list above):

- Adaptation to new situations
- Decision making
- Autonomous (Independent) work
- Group work
- Exercise of criticism and self-criticism
- Promotion of free, creative and inductive thinking
- Respect to natural environment
- Work design and management
Plant speciation and endemism patterns – Reproductive isolation mechanisms – Categories of endemic taxa – Endemism indices
Causes of plant speciation and relevant patterns in Greece – Altitudinal endemism – Refugia in time and space
Plant diversity patterns at the global and local scale
Plant diversity in Greece – Richest families, their morphological characteristics and most prominent representatives
Natural and Anthropogenic extinctions – Causes and consequences of climate change on plant diversity at the global and local scale
Extinct, Rediscovered and Newly–Described Greek endemic plant taxa – Top–50 rare Mediterranean plants – Distribution of the Greek endemic, rare, endangered and protected plant taxa
History, principles, values and ethics of Conservation Biology – Global Strategy for the Conservation of plant diversity
The Legal Foundations of Conservation Biology – National and International Legislation for the protection of plant taxa – Current plant protection status in Greece – Relevant examples
Protocols for the monitoring of rare, protected, threatened and endangered species of the Greek flora – Relevant examples
Population conservation biology - Basic concepts - Population Viability Analysis - Using PVA to identify the possible threats in situ populations are facing - Causes of population decline and response strategies - Minimum Viable Population - Invasive species and other threats

Conservation actions for the endemic, rare, threatened and protected plant taxa - Ex situ & in situ conservation - Impact of management actions - Guidelines for the implementation of conservation actions
## DELIVERY

Face-to-face, Distance learning, etc.

Lectures, seminars and laboratory work face to face.

## USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students

Use of Information and Communication Technologies (ICTs) (e.g. powerpoint) in teaching.

Support of the learning process through the e–class platform.

A series of pdf files, containing each week’s lecture, is uploaded in the aforementioned platform; thus, the students can have easy and free access to the lecture notes.

The students learn innovative statistical techniques via the R programming language and the freeware R–Studio application

## TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Semester workload</th>
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<tbody>
<tr>
<td>Lectures (2 conduct hours per week x 13 weeks)</td>
<td>26</td>
</tr>
<tr>
<td>Field work</td>
<td>8</td>
</tr>
<tr>
<td>Laboratory exercises (3 conduct hours per week x 13 weeks)</td>
<td>39</td>
</tr>
<tr>
<td>Optionally, preparation of home–works from groups of two or three students each</td>
<td>21</td>
</tr>
<tr>
<td>Bibliographical search and study</td>
<td>20</td>
</tr>
<tr>
<td>Hours for private study of the student and preparation of home–works and reports, for the Laboratory, and preparation for the Laboratory (study of techniques and theory)</td>
<td>36</td>
</tr>
<tr>
<td><strong>Course total</strong></td>
<td><strong>150 hours (total student work–load)</strong></td>
</tr>
</tbody>
</table>

## STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Written examination of weekly Laboratory exercises (80%)

Preparation and Presentation of group work (20%)
(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals:
  Lecture notes in Greek [E–class Advanced topics in Botany] – (BIO357, https://eclass.upatras.gr/courses/BIO357/)