



|   |  |   |
|---|--|---|
| <b>Course Code</b><br>CVEE-466                  | <b>Course Title</b><br>Environmental Biology and Applied Ecology | <b>ECTS Credits</b><br>6                    |
| <b>Department</b><br>Engineering                | <b>Semester</b><br>Fall, Spring                                  | <b>Prerequisites</b><br>None                |
| <b>Type of Course</b><br>Elective               | <b>Field</b><br>Civil and Environmental Engineering              | <b>Language of Instruction</b><br>English   |
| <b>Level of Course</b><br>1 <sup>st</sup> Cycle | <b>Year of Study</b><br>4 <sup>th</sup>                          | <b>Lecturer(s)</b><br>Dr Iris Charalambidou |
| <b>Mode of Delivery</b><br>Face-to-face         | <b>Work Placement</b><br>N/A                                     | <b>Co-requisites</b><br>None                |

### **Objectives of the Course:**

The main objectives of the course are to:

- Introduce the theories of environmental biology and applied ecology, the scientific concepts they are based on, and their applicability to environmental issues.
- Provide the framework for effective management and conservation of aquatic and terrestrial systems, and for understanding the response of organisms to current and future environmental change.
- Improve awareness of the integrated study of the ecological, social and biotechnological aspects of natural resource conservation and management.
- Provide students with practical experiences of collection and analysis of environmental data.

### **Learning Outcomes:**

After completion of the course students are expected to:

- Be able to explain the main concepts underlying environmental biology and applied ecology.
- Recognize key ecosystem characteristics necessary to apply ecological concepts and principles to solving real world problems.
- Transpose general principles in applied ecology from a global to a local and societal context.
- Develop skills and expertise in a variety of issues, such as monitoring and management of water quantity and quality, agro-ecosystem and natural resource management, environmental conservation and restoration, climate change and maintenance of biodiversity.

### **Course Contents:**

- Systems and ecosystems.
- Categories of organisms with a focus on animals, plants, and micro-organisms, their role in the environment, and the history of life on earth.

- Interactions of organisms and environment, responses of organisms, mostly animals, plants and micro-organisms, to environmental stimuli and stress, and the ways in which organisms interact with their biotic and abiotic environment.
- Organisation at population and ecosystem level, underpinning environmental processes, such as nutrient cycling, ecosystem services, ecological succession, ecology and evolution of organisms.
- Fundamentals of environmental problems, degradation of terrestrial and aquatic environments, urban environment and pollution.
- Management of environmental problems, pollution control technology, tools for environmental analysis, evaluation and management.
- Biodiversity and landscape protection, multiple dimensions, social issues, and conservation methods.
- Environment and development, impacts of technology, sustainable development, ecological approaches and future prospects.

**Learning Activities and Teaching Methods:**

Lectures (2 hours/week), Practicals/Seminars (2 hours/week), Field visits

**Assessment Methods:**

In-class exercises, individual and group assignments, mid-term exam, final exam.

**Required Textbooks/Reading:**

| Authors        | Title                                     | Publisher | Year | ISBN           |
|----------------|---|-----------|------|----------------|
| Hadjibiros, K. | Ecology and Applied Environmental Science | CRC Press | 2013 | 978-1466570092 |

**Recommended Textbooks/Reading:**

| Authors      | Title  | Publisher                  | Year | ISBN           |
|--------------|--|----------------------------|------|----------------|
| Scheffer, M. | Critical Transitions in Nature and Society   | Princeton University Press | 2009 | 978-0691122045 |
| Newman, E.I. | Applied Ecology and Environmental Management | Wiley-Blackwell            | 2001 | 978-0632042654 |