



Course Syllabus

Course Code	Course Title	ECTS Credits
CEE-466	Environmental Biology and Applied Ecology	5
Prerequisites	Department	Semester
CEE-260	Engineering	Fall, Spring
Type of Course	Field	Language of Instruction
Elective	Civil & Environmental Engineering	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Dr Yianna Samuel	4 th
Mode of Delivery	Work Placement	Corequisites
Face-to-face	N/A	None

Course Objectives:

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 Content:

- 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, Projects, Seminars, Field visits.

Assessment Methods:

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

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Ecology and Applied Environmental Science	Hadjibiros, K.	CRC Press	2013	978-1466570092

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Environmental Biology for Engineers and Scientists	Vaccari, David A.; Strom, Peter F.; Alleman James E.	Wiley	2005	978-0471741787 (e-book)
Ecology in Action	Singer, Fred D.	Cambridge University Press	2016	978-1316444030