SYLLABUS DEL CORSO

Ecologia Applicata

2223-2-E3201Q076-E3201Q085M

Aims

The course provides basic knowledge of applied ecology. The main objective of the course is the knowledge of human interactions with natural ecosystems, given the value of the impact that our species has on the ecosphere.

Particularly the following educational objectives are planned

**Knowledge and understanding
Knowledge of the impacts of human activities on natural ecosystems.

**Knowledge and applied understanding
Knowledge, understanding, and application of the main methodologies useful to assess the quality status of ecosystems.

Autonomy of judgment
Through the acquisition of the concepts of applied ecology, the student will increase his judgment and choice autonomy in the selection of strategies for environmental protection.

**Communication skills
During the lessons, the student will be invited to take an active part in the lesson by discussing the topics covered in class. This will improve communication skills in public.

**Ability to learn
The course will improve the student's learning skills in the interpretation of natural phenomena, disturbance and stress of natural or anthropic origin.

Contents

Contents:

Applied ecology: Human activities and environmental damage. Organic pollution of surface water. Eutrophication of lakes and marine coastal water. Effects of toxic chemicals on ecosystems. Ecological effects of soil and air pollution. Greenhouse gas emissions. Acid rain. Ozone layer depletion. Measuring biodiversity and ecological quality. Global contamination. Chemical and biological monitoring.

Detailed program

Syllabus:

Lectures

- Environmental problems: their causes and sustainability

- Examples of environmental problems on a local and global scale and effects on aquatic and terrestrial ecosystems.

- Chemical and physical contamination of the environment: Macro and micro contaminants

- Organic contamination of surface waters (BOD, COD and Eutrophication). The mass balance model for the management of lake eutrophication. Theoretical and experimental estimation of nutrient loads.

- Global chemical contamination. The problems of contamination by persistent contaminants.

- Origin and ecological effects of the contamination of the atmosphere. Greenhouse gas emissions. Acid rain. Reduction of the ozone screen.

- Origin and ecological effects of soil contamination.

- The concept of environmental quality criteria and its application in national and European regulations.

- Measuring Biodiversity and the ecological quality of ecosystems (Shannon Index; Simpson Index; IBE: Extended Biotic Index; Lichen of biodiversity Index; Macrophytes Index).

Laboratory activities

- : application of indicators for the measurement of biodiversity and ecological quality

Field activities

- collection of environmental data

Prerequisites

Basic knowledge of mathematics, chemistry, physics and statistics, as well as of botanical and zoological subjects.

Teaching form

- Lectures

Textbook and teaching resource

Miller G.T. , 2001, Scienze Ambientali, EDISES, Napolislides

Semester

annual

Assessment method

Oral examination at the end of the course. No partial tests during the course period are planned. The evaluation criteria during the exam will consist in the verification of the acquisition of competences by the student of the topics treated by the teacher during the lectures (related to the program of general ecology and applied ecology). The questions will aim to ascertain the acquisition of basic notions and to evaluate the understanding of the ecological concepts, the ability to link the different topics covered.

mark range 18-30/30

Office hours

by arrangement writing an email to antonio.finizio@unimib.it

Sustainable Development Goals

CLEAN WATER AND SANITATION | AFFORDABLE AND CLEAN ENERGY | RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION