UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Biological Complexity

**2223-1-F0601Q110-F0601Q113M**

## Aims

Knowledge and understanding: The teaching module aims to provide an integrated view of the environmental and ecological factors that contribute to the well-being of biodiversity and the human. The aim is to acquire solid skills for a critical analysis of the environment and to know and enhance the functional relationships of ecosystems that contribute, by means of ecosystem services, to improve the quality of natural resources, reduce pollution, improve food quality and support the psychophysical human well-being.
Applied knowledge and understanding: Thanks to laboratory experience, the student will acquire skills in environmental and biodiversity analysis in an operational environment. The student will also acquire skills on the stress factors that can alter the ecosystem balance and on the strategies that can be adopted to promote restoration and conservation actions with positive effects also on human well-being.
Autonomy of judgment: Interpreting the ecosystem complexity and the disturbing or supporting elements of the functional relationships between organisms also in relation to environmental variables, the characteristics of the territory and the presence of anthropogenic activities.
Communication skills: the course aims to provide the student with the skills to communicate effectively, appropriately and with a good scientific language the concepts related to biological ecosystemic complexity and to interact with management bodies to develop strategies to support, restore and enhance biodiversity .
Ability to learn: at the end of the course the student must be able to autonomously explore the issues of ecosystem complexity in different environmental and territorial contexts.

## Contents

This laboratory module is aimed at the analysis of different types of ecosystems with different degrees of complexity and environmental and anthropic criticality to evaluate strategies for improvement, strengthening and to build resilient communities.

## Detailed program

The course will take place entirely in an operational environment through daily or multi-day excursions in different ecosystem contexts. Specifically, the aim is to analyze different biomes, typical of the national context, such as the Mediterranean scrub and the lowland forest. From a technical point of view, the laboratory provides for the ecosystem framework with particular reference to the analysis of flora and vegetation and with some elements of fauna that characterize certain environments.
Analysis of native and exotic species, study of species distribution and their temporal evolution. Characterization of protected areas, natural and naturalized areas and parks and / or reserves also in an urban context. Effects of biodiversity on environmental components: temperature, water, resource cycle. Stress factor analysis. Elements of active and passive bioindication. Analysis of the relationship between biodiversity and personal well-being.

## Prerequisites

Knowledge of general botany

## Teaching form

Lessons in the field through daily and multi-day excursions

## Textbook and teaching resource

The slides shown in class are provided on the e-learning platform.

## Semester

Second semester

## Assessment method

The oral exam aims to verify the acquisition of the knowledge foreseen in the course objectives and will consist of oral questions, aimed at ascertaining the understanding of the topics covered
Evaluation Criteria: scientific and technical knowledge of the topics considered in the course, critical and individual re-elaboration skills, communication skills and correct use of technical language.

## Office hours

By appointment by writing to the reference teachers

## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | SUSTAINABLE CITIES AND COMMUNITIES | CLIMATE ACTION | LIFE ON LAND