UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Principles of Biology

2526-1-E3304M004-E3304M004-2

Learning objectives

This course will cover the introductory concepts of plant biology and plant ecology, including plant biodiversity and the fundamental processes of plants that form the basis of their productivity such as photosynthesis and respiration. We will also discuss the social benefits that plants can provide to communities. The goal of the course is to familiarize students with the terminology and biological concepts at the heart of plant biodiversity and plant physiology and introduce the agricultural techniques used in the production of both edible and non-edible biomass.

The course consists of a total of 48 hours of teaching (3 ECTS), of which 24 will be focused on the principals of plant biology and biomass production which will be divided into 16 hours of in-person lectures and 8 hours of online/e-tivity sessions. Classes will be held weekly and will utilize PowerPoint slides for lecture materials and the tools available through the e-learning platform for online activities and self-assessment.

1. Knowledge and understanding: Upon successful completion of the course students will have a solid understanding of foundational plant biology and plant ecology concepts (i.e. photosynthesis, biodiversity).

2. Knowledge and applied comprehension skills: In addition to mastering the main technologies presented, students must develop critical skills to apply the concepts learned in various fields of interest.

3. Autonomy of judgment: By the end of the course, students will understand the environmental factors that govern the distribution and growth and physiology of plants and will have the knowledge to critically assess the different approaches used in the production of plant biomass (i.e. agricultural techniques).

4. Communication skills: By the end of the course, students will have acquired appropriate scientific terminology and will be able to present e course topics using accurate terminology.

5. Learning ability: By the end of the course, students will be able to read scientific literature and explore covered topics.

Contents

The course will examine the foundational concepts of plant ecology and plant physiology that govern the distribution and productivity of plants as resources of edible biomass.

Detailed program

Introduction to plant ecology, organismal biology and plant physiology: ecology, population and community dynamics, biological levels of organization and hierarchy, photosynthesis, cellular respiration e metabolism, fermentation, and ecosystem services; Biological resources – production of edible and non-edible biomass: sustainable agriculture and food production, organic versus conventional agriculture in the context of climate change, GMOs versus traditional breeding, biodynamic farming and agroforestry; Biological resources – social benefit: food production in community and social gardens, education and active engagement with Nature, public health and green spaces.

Prerequisites

None

Teaching methods

Sixteen hours of lessons will be conducted exclusively in person (no streaming) and recorded, with recordings made available along with powerpoint lecture files. Additionally, eight hours will be delivered online in e-tivity mode and will focus on applying concepts learned in class accompanied by self-assessment activities.

Assessment methods

Written. The exam will consist of 6 questions: 3 concentrating on the first part of the course (Principles of Biology) and 3 on the second part of the course (Biological System of Resources). Students will be evaluated based on the level of knowledge demonstrated in their responses and their capacity to apply their knowledge on simple problem-solving exercises. No midterm exams are scheduled.

Textbooks and Reading Materials

Educational materials (ppt presentations) prepared by the instructor

Semester

First semester

Teaching language

English

Sustainable Development Goals

RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION | LIFE ON LAND