

## COURSE DETAIL

### SOIL BIOLOGY AND GLOBAL CHANGES

**Country**

Italy

**Host Institution**

University of Bologna

**Program(s)**

University of Bologna

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Biological Sciences

**UCEAP Course Number**

146

**UCEAP Course Suffix****UCEAP Official Title**

SOIL BIOLOGY AND GLOBAL CHANGES

**UCEAP Transcript Title**

SOIL BIO&GLOBAL CHG

**UCEAP Quarter Units**

6.00

**UCEAP Semester Units**

4.00

## Course Description

Upon completion of the course, the student is able to: Understand the chemical and biological composition of soils and their importance for ecosystem functioning; explain the role of microbial biodiversity in biogeochemical cycles (C, N, P, S) and soil health; analyze the interactions between soil microorganisms, soil fauna and plants; assess the effects of global changes on soil biological functioning; use scientific concepts and terminologies to describe soil biological and biochemical processes and their environmental implications; and relate theoretical knowledge to case studies applied to sustainable management and climate change mitigation. Topics include:

### Soil Biochemistry and Functionality:

- Soil composition: organic and inorganic components.
- Chemical properties: pH, cation/anion exchange capacity, adsorption.
- Microbial enzyme activity and nutrient cycling (C, N, P).
- Role of organic matter in regulating ecosystem services.
- Strategies for soil management and climate resilience.

### Soil Biology and Global Changes:

- Microbial biodiversity and interactions with soil fauna.
- Microbial regulation of biogeochemical cycles (C, N, P, S).
- Impacts of climate change, land use and pollution on soil biology.
- Role of soil in greenhouse gas emissions and carbon storage.
- Soil-climate feedback mechanisms.

## Language(s) of Instruction

English

## Host Institution Course Number

C0202

## Host Institution Course Title

SOIL BIOLOGY AND GLOBAL CHANGES

## Host Institution Course Details

<https://www.unibo.it/en/study/course-units-transferable-skills-moocs/course-uni...>

**Host Institution Campus**

BOLOGNA

**Host Institution Faculty**

**Host Institution Degree**

L in BIOLOGY OF HUMAN AND ENVIRONMENTAL HEALTH

**Host Institution Department**

Biological, Geological, and Environmental Sciences

**Course Last Reviewed**

2025-2026

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