UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Biology Teaching

2526-4-G8501R046-G8501R074M

Course title

Biology didactics

Topics and course structure

Different topics of biology, ecology and environmental education

Particular reference will be devoted to the environmental education and to the didactics of ecology.

Objectives

Aim of the course is teaching biology techniques, with a special reference to national programs.

A discussion about surfing and choosing news in biology will be proposed.

The ability of connecting the biology contents to evolutionary stories and to ecological relationships is another important aims of this course.

Methodologies

Lesson, active teaching methodologies, practical laboratory

14-hour lectures, in person, Delivered Didactics
14-hour lectures, in person, Interactive Teaching

Online and offline teaching materials

Slides and supplementary matherials (paper and exercises) discussed in classroom

Programme and references

***he course will cover several topics:

Indicatively the blocks of lesson hours (two academic hours at a time) will follow this pattern:*** 1. Biology and ecology in the indications for the curriculum
2. Ecology: definitions and history of ecology
3. Numbers to interpret science: introduction to statistics
4. Anthropocene and environmental crisis
5. Population dynamics and human population dynamics
6. The domestication of plants and animals from an ecological perspective
7. Migration and environmental consequences over time
8. Global warming 1 - Facts and consequences
9. Global warming 2 - Dissemination documentaries
10. Global warming 3 - How to teach it
11. Global warming 4 - Tackling scientific denialism
12. Biodiversity crisis 1 - Past histories and current situation
13. Biodiversity Crisis 2 - How to conserve biodiversity today
14. Biodiversity crisis 3 - Studying and tackling the biodiversity crisis at school

Bibliography 1) Padoa-Schioppa E. *Quaderni e strumenti per l'insegnamento e l'apprendimento della Biologia* Edises

2) Padoa-Schioppa E. *Antropocene - Una nuova epoca per la terra, una grande sfida per l'umanità* - Il Mulino

3. A basic biology/ecology texbook can be useful. Students may use a textbook of high school. During the first lesson I will indicate any university reference texts that are not mandatory in any case.
   4) All students (attending and not attending) must also read one of the following texts:

- Boscolo M, Tola E, *Semi ritrovati*, Codice Edizioni
- Bressa R *Trrafficanti di natura* Codice Edizioni
- Padoa-Schioppa E *Storia ecologca dell'Europa* Il Mulino

During the lessons will be indicated and provided additional educational materials (articles and slides) that will integrate the preparation of the exam

Assessment methods

The exam consists of a written exam with closed-ended questions and open-ended questions with an optional oral exam (at the request of either the student or the teacher). The closed-ended questions have the objective of verifying the basic notions and terminology; the open questions have the objective of evaluating, in addition to knowledge, the correct ability to explain and make connections. There will also be open and closed questions on the book of your choice.
The optional oral exam will consist in the discussion of any critical issues in the written text and any need to verify and deepen the knowledge of the topics covered in class and in the laboratory activities or the book of your choice.
At the end of the module, an optional ongoing test will be proposed which, if passed positively, (together with a similar test in the chemistry module) will allow enrollment in the first useful exam session.
The ongoing tests have the same overall structure as the written/oral exam
Ongoing written tests with the same overall structure as above are further proposed, as a possible choice by the students.

In order to implement a transparent evaluation of the exam, the general criteria adopted are reported.
The general criteria include an overall evaluation of the closed questions (correctness) and open questions in which the following parameters will be taken into global consideration:

Completeness and accuracy of conceptual processing;
Critical analysis and synthesis skills;
Accurate and rigorous use of scientific terminology;
Ability to apply conceptual connections.
The evaluation levels will take into account the parameters indicated, which may be present (all or some) in an insufficient, partial, complete, in-depth, coherent/incoherent, exhaustive, advanced or excellent manner. The overall evaluation will take into account the parameters indicated and used for the evaluation of the open questions (or any oral exams), together with the evaluation of the closed questions.

Students who follow educational activities as part of an Erasmus program can choose to take the exam either in Italian or in English.
The exam sessions scheduled for the Biology Teaching module taken in the 2025/26 academic year must be completed with a session for the Chemistry module within the same academic year, otherwise the exam cannot be recorded. The midterm tests taken during the course require special rules that are explained in class and on the e-learning pages.

Office hours

Monday at 16.30 after appointment by e-mail

Programme validity

One academic year

Course tutors and assistants

Claudia Canedoli
Simone Masin
Emanuele Asnaghi

Sustainable Development Goals

NO POVERTY | ZERO HUNGER | GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY | CLEAN WATER AND SANITATION | AFFORDABLE AND CLEAN ENERGY | DECENT WORK AND ECONOMIC GROWTH | INDUSTRY, INNOVATION AND INFRASTRUCTURE | REDUCED INEQUALITIES | SUSTAINABLE CITIES AND COMMUNITIES | RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION | LIFE BELOW WATER | LIFE ON LAND | PEACE, JUSTICE AND STRONG INSTITUTIONS | PARTNERSHIPS FOR THE GOALS