UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Biology and Biology Teaching - M-Z

2324-3-G8501R045-G8501R071M-MZ

Course title

BIOLOGY – FUNDMENTALS AND DIDACTICS WITH LABORATORY

Topics and course structure

Synthesis of the program

-The basis of Biology

-Biological systems: from cells to organisms

-The biological world: environment, evolution, biodiversity

-Ecology and environmental education

Detailed program

The main topics of Biological, Natural and Environmental Sciences will be part of the course, following the proposed scheme:

- Definition of life
- Organic molecules and the chemistry of life
- Procaryotes and eucaryotes
- Animal and plant cells organisation
- Metabolism
- Cell division: mitosis and meiosis
- Inheritance of characters

- From single cells to complex structures: tissues and organs
- General function and structure of the human body
- Structure and function relationship: how the environment plays its role.
- Taxonomy and classification of the organisms
- Biological evolution
- Didactic of evolution
- The history of life
- The evolution of humans
- Fundamental aspects of biological systematic
- Fundamental features of plants
- Fundamental features of animals
- Ecology and environmental education
- Science communication

Objectives

Biological structures and functions, evolution and environmental relationships are the core topics of the course.

Main objects are:

1. to know disciplinary contents and the appropriate scientific language
2. to learn the means for communicating the contents and the ways to propose them to the children of infant and primary school
3. to localize the contents into the environment, within evolution and ecological relations
4. to approach reading

Methodologies

Lessons, active teaching methods, practical labs

Online and offline teaching materials

Slides and supplementary materials discussed in classroom, and all additional material (e.g., videos, books, scientific papers) suggested during the lessons.

Programme and references

References

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

2) It is necessary to refer to a text containing the main topics of Biology. A detailed high school text could be appropriate, or for a more detailed study, one of the following texts can be used:

- Sadava D et al., Elementi di biologia e genetica – quinta edizione- Zanichelli

- Sadava D et al., Biologia vol. 5. La biologia degli animali - Zanichelli

- Sadava D et al., Principi di Biologia - volume unico - Zanichelli

- Solomon et al., Fondamenti di biologia - EdiSES

3. All the students (attending and non attending) have to read one of the books to be chosen among those indicated by the teacher.

During the course additional material (papers and slides) could be suggested and provided and uploaded on site before the exam.

Assessment methods

Assessment methods will consist of a written exam with closed questions and open questions with an optional oral test (at the request of either the student or the teacher). The closed questions have the objective of verifying the basic knowledges and terminology; open questions aim at verifying overall knowledge, and the ability to describe and connect different topics. There will also be closed questions and an open question on the book chosen by the students, also with a view to teaching planning.
The optional oral test 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 chosen by the students.

Oral and written according to the followings.

Written test with closed and open questions. Closed questions aim at evaluating the basic knowledge and language property; open questions aim at verifying overall knowledge, and the ability to describe and connect different topics.

Oral test will start from the discussion of possible critical points of the written test, and will be centered on the examination of detailed knowledge of all topics of the course (frontal lessons and laboratory). The book chosen by the students in view of a teaching planning will be discussed as well.

Ongoing written and oral tests with the same overall structure as above are further proposed, as a possible choice by the students.

Office hours

To be agreed with students by mail (chiara.urani@unimib.it)

Programme validity

One academic year

Course tutors and assistants

Federica Bovio

Claudia Canedoli

Matilde Forcella

Simone Masin

Noemi Rota

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES | CLIMATE ACTION | LIFE ON LAND