



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Biologia: Fondamenti e Didattica - 2

1819-3-G8501R018-G8501R018M-T2

Course title

Biology: fundamentals and didactics with laboratory

Topics and course structure

- 1) Evolution
- 2) Biodiversity and human diversity
- 3) Climate change
- 4) Biodiversity, invasive species and function of ecosystems
- 5) Ecology and environmental education

Objectives

Biological evolution and environmental relationships are fundamental aspects. Aims of the course are not only biology contents, but also how to propose them in classrooms of kindergarten and primary school.

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

Methodologies

Lesson, active teaching methodologies, practical laboratory

Online and offline teaching materials

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

Programme and references for attending students

Programme

The course will cover the major topics of biology. Tentatively I will follow this pattern:

- definition of life
- chemistry of life
- prokaryotic and eukaryotic cells
- cellular metabolism
- cell reproduction (mitosis and meiosis)
- genetic
- Taxonomy 1 (classical taxonomy)
- 2 taxonomy (DNA barcoding)
- evolution 1 (from ancient times to Darwin)
- 2 evolution (modern synthesis)
- teaching of evolution
- history of life on earth
- evolution of man
- foundations of biological systematics
- Plant 1
- Plants 2
- Animals 1
- Animals 2
- fungi, bacteria
- Ecology 1
- Ecology 2
- environmental education
- Climate Change 1
- Climate Change 2
- biodiversity 1
- biodiversity 2
- science's communication

References

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

2) A biology textbook, for consultation is mandatory. Students may use a textbook of high school, otherwise may consult one of the following textbooks (that I use for my lessons):

- Solomon, Berg, Martin *Biologia o Fondamenti di Biologia* EdiSES (modules 1, 2, 3, 6)
- Campbell, N. A.; Reece J. B.; Simon E.J., *Biologia o L'essenziale di biologia*, Pearson

- Madler S. *Biologia: l'essenziale* Piccin

3) For all the students is mandatory to choose one book among:

- Wilson E.O. (2010) *Anthill* Elliot edizioni
- Kelly J. (2009) *L'evoluzione di Calpurnia* Salani Editore
- Cipriani (2011) *Il mistero di Burgess Shale* Feltrinelli

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

Programme and references for non-attending students

Same as attending students

Assessment methods

Written and oral examination

Written part: test (multiple choice questions) and open questions. If the result of written part is positive oral part examination

The oral exam (if the written texts have been passed) will start from the written test, and will then extend to the verification of the knowledge of the whole program and of what has been learned in the laboratories

Office hours

Monday at 16.30 after appointment by e-mail

Programme validity

Two academic years

Course tutors and assistants

Claudia Canedoli

Simone Masin
