Universidad de Navarra

Biology Fundamentals

Guía docente 2025-26

COURSE DESCRIPTION

In this subject, the students will acquire a general and integrated knowledge on living organisms from the morphological, biological, functional, evolutionary and ecological perspectives. At the end of the course, they will have a broad knowledge of the tree of life with special attention to plants and animals. The course also offers an introduction to the diversity and evolutionary systematics of living organisms.

- **Degree**: Biochemistry
- **ECTS**: 3
- **Year, semester**: 1st year, 2nd semester
- **Subject type**: required
- **Instructor**: Ana Villarroya, Department of Environmental Biology
- **Language**: English
- **Room, Schedule**: sessions on Mondays 09:00-10:00 (room 13) and Fridays 08.00-09.00 (room 17)

LEARNING OUTCOMES (Competencies)

Specific competences

- CE7: Understand the differences between the main living organism groups, from microorganisms to higher organisms.

General and basic competencies

- CG3: To develop team-working capacities, to be able to select and to choose the appropriate methodologies and distribution of functions. To listen and to speak with positive and constructive interventions.
- CB1: To demonstrate knowledge and understanding in a particular field of study whose starting point is the general secondary education and includes aspects in the frontiers of knowledge, with the support of advanced textbooks.
- CB2: To be able to apply the obtained knowledge to the work in a professional manner and to show competencies have been acquired by means of the development and defense of ideas and problem resolution within their study area.
- CB4: To be able to communicate information, ideas and answer questions to specialist and non-specialist audiences.

SYLLABUS

- Introduction
  - Presentation
  - Life: origin, characteristics, organization, diversity
- Fundamentals of Biology
  - Biological nomenclature, taxonomy and systematics
  - Plant morphology and reproduction
  - Animal embryonary development and archtypes
- Biological Diversity
  - Fungi, Algae, Bryophytes (mosses) and Pteridophytes (ferns)

  - Spermaphytes: Gymnosperms (conifers) and Angiosperms (flowering plants)
  - Primitive animals
  - Invertebrates
  - Vertebrates
- Fundamentals of Ecology
  - Populations and Communities
  - Biogeography

EDUCATIONAL ACTIVITIES

Lectures (22 hours)

Lectures will cover the syllabus and constitute the matter for the final exam. Attendance is not a requirement, but it is highly recommended.

GRADING

There will be a final exam that will account for 90% of the total grade. The remaining 10% can be achieved by carrying out an assignment that will be described in class.

SECOND CALL (JUNE)

The exam in june will account for 90% of the total grade. The remaining 10% will correspond to the assignments carried out during the semester, and cannot be retaken in June.

TUTORING

By appointment only (avillarroya@unav.es)

BIBLIOGRAPHY AND RESOURCES

Recommended bibliography

Hickman et al. Integrated principles of Zoology. Localízalo en la Biblioteca

Brusca, Brusca. Invertebrates. Find it in the library

Kardong. Vertebrates: comparative anatomy, function, evolution. Localízalo en la Biblioteca

Raven, Evert, Eichhorn. Biology of Plants. Find it in the library

Bresinsky et al. Strasburger's Plant Sciences. Find it in the library

van der Maarel, E. 2005. Vegetation Ecology. Wiley-Blackwell. 408 pp. Find it in the library Find it in the Library **[electronic source]**

Related readings

Novo, Pereda, Sánchez-Cañizares. 2017. Naturaleza creativa . RIALP (spanish) Localízalo en la Biblioteca

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Resources

The Plant List (2013). Version 1.1. http://www.theplantlist.org/

Tree of Life: http://tolweb.org/tree/

Open Tree of Life, interactive version of the tree of life: http://opentreeoflife.org/

Flora Iberica. Real Jardín Botánico de Madrid. CSIC: http://www.floraiberica.es/index.php

Watson, L. & Dallwitz, M.J. The Families of Flowering Plants: http://delta-intkey.com/angio/

Kean University, Union, NJ - BIO 2500 Principles of Botany: http://samson.kean.edu/~breid/Botany/botlab14.html http://samson.kean.edu/~breid/Botany/botlab15.html

Papers

Folse III HJ, Roughgarden J. 2010. What is an individual organism? A multilevel selection perspective. *The Quarterly Review of Biology 85(4)*: 447-472. Accessible at: https://www.journals.uchicago.edu/toc/qrb/2010/85/4