

**COURSE DATA****DATA SUBJECT****Code:** 47177**Name:** Ecología y sistemática de invertebrados acuáticos**Cycle:** Master's Degree**ECTS Credits:** 3**Academic year:** 2026-27**STUDY (S)**

Degree	Center	Acad. year	Period
2291 - Máster Universitario en Biodiversidad: Conservación y Evolución	Facultat de Ciències Biològiques	1	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
2291 - Máster Universitario en Biodiversidad: Conservación y Evolución		

COORDINATION

PEÑA CANTERO ALVARO LUIS

SUMMARY

The instructors of this course assume that students possess a basic knowledge of the main groups of aquatic invertebrates. Therefore, the aim of this course is to deepen and complement students' understanding of biological and ecological aspects, focusing primarily on the natural history, morphology, and systematics of these organisms.

The course is divided into two major sections: one devoted to the study of marine invertebrates and the other to the invertebrates of inland waters.

In the marine section, the biology, ecology, and distribution of the principal groups of marine invertebrates are studied. This part of the course has a strong theoretical and practical orientation, with integrated sessions that include the observation and identification of marine fauna, allowing students to become familiar with the various groups of invertebrates covered.

In the inland-water section, students are introduced to the principal groups of macroinvertebrates present in different freshwater ecosystems and their adaptations. Particular emphasis is placed on the study of their biology, ecology, distribution, and indicator value. Communities inhabiting running and standing waters are characterized. The physicochemical parameters that condition life in freshwater environments



are examined. Students are introduced to sampling methodologies, the most widely used biotic indices, predictive methods, the interpretation of environmental and biological data, water-quality maps, and relevant legislation. The impacts of pollution on freshwater fauna are analysed. Students will also advance their skills in taxonomic identification, faunistic inventory preparation, biotic index calculation, data processing, and the production of water-quality maps.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

COMPETENCES / LEARNING OUTCOMES

DESCRIPTION OF CONTENTS

Topic 1. Presentation of the principal divisions of the oceans, including both the pelagic and benthic domains, together with their most important characteristics.

Topic 2. Systematic and ecological study of the principal groups of marine invertebrates.

Topic 3. Introduction. Brief historical overview. Inland waters: concepts, typology, and terminology. Principal taxonomic groups present in continental waters.

Topic 4. Habitats of running waters (lotic systems) and standing waters (lentic systems). Brief typology. Distribution and characterization of communities. Adaptations.

Topic 5. Spring-water habitats. Typology and characterization of communities. Refuge zones. Habitats with extreme conditions: temporary waters, springs, thermal waters, peat bogs, athalassohaline waters, and polluted waters.

Topic 6. Freshwater natural environment: physicochemical parameters. Characteristics that condition life in inland waters. Chemical composition of inland waters.

Topic 7. Taxonomic groups used in the assessment of inland-water quality. Macroinvertebrates. Biology, ecology, indicator value, and distribution of the different taxonomic groups of hydrozoans, platyhelminths, rotifers, gastrotrichs, kinorhynchans, priapulids, nematomorphs, nematodes, and annelids.

Topic 8. Macroinvertebrates. Molluscs: gastropods and bivalves. Selected invasive mollusc species. Ecosystem alteration and control.

**WORKLOAD****PRESENCIAL ACTIVITIES**

Activity	Hours
Theory	12,00
Laboratory	18,00
Total hours	30,00

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	30,00
Independent study and work	15,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	45,00

TEACHING METHODOLOGY

For the section devoted to the marine environment, an initial plenary lecture will be delivered in which the principal divisions of the oceans and their most important characteristics will be presented. The remaining sessions will combine theoretical and practical components, introducing the morphology, biology, and ecology of the principal groups of marine invertebrates, with particular emphasis on identification methods and diagnostic characters. These aspects will be explored in greater depth through the identification of specimens from different taxonomic groups using identification keys.

For the inland-water section, theoretical sessions will introduce the principal groups of macroinvertebrates, with particular attention to their biology, ecology, distribution, and indicator value. Running-water and standing-water communities will also be characterized, and the physicochemical parameters governing life in freshwater ecosystems will be studied. Students will further develop their taxonomic identification skills using identification keys and will gain experience in preparing faunistic inventories, calculating biotic indices, processing data, and producing water-quality maps.

Attendance is compulsory.

All activities will be managed through the Aula Virtual platform of the Universitat de València, which will also serve as the main communication channel.

EVALUATION

Assessment will be continuous and will take into account attendance (with a minimum of 80% attendance), as well as students' participation and attitude toward the course. In the marine invertebrates section, students will also be required to complete an examination or a project involving the identification and



inventory of marine samples which will account for up to 50% of the grade.

REFERENCES

- Barnes, R. S. K.; Calow, P.; Olive, P. J. W.; Goding, D. W. y Spicer, J. I. (2001). The Invertebrates. A synthesis. Third edition. Wiley-Blackwell, Oxford. 497 pp.
- Brusca, R.C.; Moore, V.; Shuster, S.M. (2016). Invertebrates. (3ª Edition). Ed. Sinauer Associates, Inc., Sunderland, Massachusetts, USA.
- Nielsen, C. (2001). Animal evolution. Interrelationships of the living phyla. Second edition. Oxford University Press, Oxford. 563 pp.
- Pearse, V., Pearse, J., Buchsbaum, M. & Buschsbaum, R. (1987). Living Invertebrates. Blackwell Scientific. Boston, Massachusetts.
- Pechenik, J.A. (2005). Biology of Invertebrates. Mc Graw-Hill. Boston, Massachusetts.
- Ruppert, E.E. & Barnes, R.D. (1995). Zoología de los Invertebrados. McGraw-Hill. Interamericana. Madrid.
- Tachet, H. Bournaud, M. & Richoux, P. (1987). Introduction à l'étude des macroinvertebrés des eaux douces. Uni. Lyon Publ. 154 pp.