# COURSE DATA

## DATA SUBJECT

**Code:** 47088
**Name:** Calidad de aguas y estado ecológico de los ecosistemas acuáticos continentales
**Cycle:** Master's Degree
**ECTS Credits:** 3
**Academic year:** 2026-27

## STUDY (S)

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 2285 - Máster Universitario en Contaminación Ambiental y Ecotoxicología | Facultat de Ciències Biològiques | 1 | Second quarter |

## SUBJECT-MATTER

| Degree | Subject-matter | Character |
|---|---|---|
| 2285 - Máster Universitario en Contaminación Ambiental y Ecotoxicología | Cambio climático y contaminación ambiental | COMPULSORY |

## COORDINATION

CAMACHO GONZALEZ ANTONIO

ANDREU SANCHEZ OSCAR ENRIQUE

# SUMMARY

The course "Water quality and ecological status of inland aquatic ecosystems" aims to provide students with theoretical and practical knowledge that will enable them to evaluate the problems, especially those related to water pollution, affecting aquatic ecosystems. It also includes the evaluation of the ecological status of these ecosystems in the light of the Water Framework Directive (2000/60/CE) and the actions for their improvement, and with reference to the conservation of natural habitats, the Habitats Directive (92/43/CEE), as well as the legislation and programs of measures associated with the implementation of both directives in Spain and the European Union, and other legislative areas associated with water quality.

# PREVIOUS KNOWLEDGE

## RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

## OTHER REQUIREMENTS

No enrollment restrictions have been specified with other subjects of the study plan.

## COMPETENCES / LEARNING OUTCOMES

### 2285 - Máster Universitario en Contaminación Ambiental y Ecotoxicología

Acquire the capacity for autonomous and organised learning and for adapting to new situations.

Act autonomously in learning, make informed decisions in different contexts, issue judgements based on experimentation and analysis and transfer knowledge to new situations.

Develop the ability to work in multidisciplinary teams and to cooperate effectively.

Develop the capacity for analysis, synthesis and critical thinking in applying the scientific method.

Evaluate and assess the impact of human activities on pollution in the atmosphere, inland waters, marine waters and soils.

Evaluate the behaviour of pollutants and their interactions in different environmental compartments.

Learn how to write scientific articles in the fields of environmental pollution and ecotoxicology.

Propose creative and innovative solutions to complex situations or problems within the field of knowledge to respond to diverse professional and social needs.

Understand and interpret the processes of atmospheric, aquatic and soil pollution and their effects.

Understand the natural world as a product of evolution and its vulnerability to human influence.

Understand the structure, dynamics and flows of ecosystems.

Use computer tools, statistical methods and data simulation appropriately, applying software and statistics in ecotoxicology and in issues arising from environmental pollution.

Use different bibliographic sources and biological databases.

## DESCRIPTION OF CONTENTS

**Theory lectures**

Topic 1.- Introduction: Water, physical properties and water cycle. Hydrological regime of aquatic ecosystems. Aquifers.

Topic 2.- Water Framework Directive. Other European Directives affecting aquatic ecosystems.

Topic 3.- Hydrological planning. Affection to the quality and quantity of water and aquatic ecosystems.

Topic 4. Contamination of epicontinental aquatic systems, basic concepts. Bioaccumulation in the trophic networks. Matrices: water, sediments and biota.

Topic 5. Main types of pressures and brief recapitulation and exercises on polluting processes and their effects on aquatic ecosystems.

Topic 6. Evaluation of water pollution and the state of aquatic ecosystems: Topic Topic 7. hydromorphological indicators and determination methods.
Topic 8. Evaluation of water pollution and the state of aquatic ecosystems: physical-chemical indicators and determination methods.
Topic 9. Assessment of water pollution and the state of aquatic ecosystems: Biological indicators and determination methods.
Topic 10. Ecological status assessment (ESA) and conservation status (CS). Advanced methods for monitoring aquatic ecosystems.
Topic 11.- Monitoring. Physico-chemical, hydrological and biological control networks.
Topic 12. Other regulations on water quality and health of aquatic ecosystems.

Topic 13. Palliative measures for the contamination of aquatic ecosystems.

Topic 14.- Integrated management of water resources.

**Practical classes:**

1.- Field trip to take biological and water samples in river and lake stretches with different levels of contamination. In situ analysis of electrochemical parameters.

2.- Laboratory classes for the analysis of water samples. Biological, physical-chemical and microbiological analyses. Study of organisms (benthic macroinvertebrates and plankton).

3.- Cabinet work, and sharing of results: Evaluation of water quality and ecological status. Contrast with current legislation.

## WORKLOAD

### PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Theory | 13,00 |
| Laboratory | 17,00 |
| **Total hours** | **30,00** |

## NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Attendance at other activities | 0,00 |
| Individual or group project | 10,00 |
| Independent study and work | 15,00 |
| Preparation of lessons | 10,00 |
| Preparation for assessment activities | 0,00 |
| Resolution of case studies | 10,00 |
| **Total hours** | **45,00** |

# TEACHING METHODOLOGY

Theory lectures to develop the fundamental knowledge and methodology to be used.

Classroom exercises associated with the theoretical classes.

Practical classes in which practical aspects on the evaluation of pollutants and indicators will be addressed, including instrumental measurements and handling of experimental data obtained in the field and laboratory sessions.

The autonomous work of the student will be reinforced by means of face-to-face tutorials, at a distance or through the virtual classroom in order to answer the specific doubts that could arise during the lecture sessions.

In all activities the "AULA VIRTUAL" (virtual classroom tool of the University of Valencia) will be used for the exchange of documents and communication.

# EVALUATION

Written exams on the theoretical and/or practical classes: based on the learning outcomes and the specific objectives of the course, this part has a weight of 60% of the final grade. The minimum grade that can be compensated with the practical part is 4.0 out of 10.

Elaboration of an internship report that includes the work carried out during the field and laboratory sessions, including a critical discussion of the results obtained during them. This part has a weight of 40% of the final grade. Attendance to at least 80% of the sessions is compulsory. The minimum grade that can be compensated with the theory part is 4.0 out of 10.

Recovery of the theoretical part: There will only be one recovery (second call) of the theoretical part of the course for those students failed or not presented in the first call.

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