COURSE DATA

DATA SUBJECT

Code: 43247
Name: Animal adaptations to marine environments
Cycle: Master's Degree
ECTS Credits: 3
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period

SUBJECT-MATTER

Degree	Subject-matter	Character

COORDINATION

PEÑA CANTERO ALVARO LUIS

SUMMARY

The concept of biodiversity encompasses many different aspects at different biological scales. The general objective of this course is to address the study of biological diversity in relation to the adaptations and life strategies of marine animals. The aim is that students know which are the fundamental mechanisms and adaptations that marine animals present to face their vital requirements.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

None.

COMPETENCES / LEARNING OUTCOMES

2148 -

Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it

sensibly.

Favour intellectual curiosity and encourage responsibility for one's own learning.

Stimulate the capacity for critical reasoning and for argumentation based on rational criteria.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

Students should demonstrate self-directed learning skills for continued academic growth.

DESCRIPTION OF CONTENTS

1. The marine environment

Zonation and characteristics of the pelagos and benthos.

2. Intertidal

Water loss, temperature, mechanical stress, salinity, respiration, feeding, and predation.

3. Temperature

Adaptative strategies of poikilotherms and homeotherms.

4. Estuaries and Osmoregulation

Adaptative strategies related to ion regulation.

5. Perceiving the environment

Photoreceptors, Mecanoreceptors (Statoreceptors and Phonoreceptors) and Chemoreceptors. Electroreception and Magnetoreception.

Principles. Adaptations to buoyancy in the plankton. Nekton: buoyancy and locomotion, defence and

6. Buoyancy and nekton

camouflage, echolocation, schooling, migration and diving.

7. Bioluminescence and Deep Sea

Bioluminescence. Adaptations to the deep ocean: light, food, reproduction, sediment, abyssal gigantism.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Total hours	**0,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	25,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**45,00**

TEACHING METHODOLOGY

The theoretical classes will be developed following the model of a master class, since it is the model that allows to emphasize the most essential of each subject and to control the appropriate development of the subject.

Seminars, which are compulsory, will be prepared by the students on topics proposed by the teacher in order to go deeper into topics of special interest. Students will prepare oral presentations on these topics, which will be presented in class and handed in for assessment.

Tutorials will be held to solve the questions and doubts raised by the students with respect to the topics explained.

All the activities will be managed through the University of Valencia's Virtual Classroom platform, which will also serve as a means of communication.

EVALUATION

The evaluation will be carried out by means of two mechanisms. On the one hand, there will be a written test, with the aim of assessing the assimilation and understanding of the contents of the subject. This written exam will have a maximum value of 7 points (out of 10). On the other hand, a maximum of 3 points (out of 10) will be awarded for the seminar and its presentation in class, which is compulsory. The contents of the different presentations may also be considered in the written test.

In order to pass the course, and add the grade for the seminar presented in class, it will be necessary to pass the written exam, for which a minimum of 5 points (out of 10) must be obtained.

REFERENCES

- Bradley, T.J. (2009) Animal Osmoregulation. Oxford University Press.
- Castro, P., Huber, M.E. (2016) Marine Biology. McGraw-Hill Education.
- Helfman, G.S., Collette, B.B., Facey, D.E., Bowen, B.W. (2009) The Diversity of Fishes. Biology, Evolution, and Ecology. Wiley-Blackwell.
- Levinton, J.S. (2009). Marine Biology. Function, biodiversity, ecology. Oxford University Press.
- Nybakken, K.J. (1983). Marine Biology: an ecological approach. Wiley. Chichester.
- Randall, D.J., Farrell, A.P. (1997) Deep-Sea Fishes. Academic Press.
- Willmer, P., Stone, G., Johnston, I. (2005) Environmental Physiology of Animals. 2nd edition. Blackwell Publishing.