COURSE DATA

Data Subject	
Code	43272
Name	Biodiversity and environmental protection
Cycle	Master's degree
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2148 - M.D. in Biodiversity: Conservation and Evolution	Faculty of Biological Sciences	1	First term

Subject-matter

Degree	Subject-matter	Character
2148 - M.D. in Biodiversity: Conservation and Evolution	11 - Protection of the diversity of ecosystems	Optional

Coordination

Name	Department
LOPEZ LOPEZ, PASCUAL	275 - Microbiology and Ecology
ORTELLS BAÑERES, RAQUEL PILAR	275 - Microbiology and Ecology

SUMMARY

Biodiversity and Environmental Protection is an elective course for the Master's degree in Biodiversity: conservation and evolution, which is taught during four months and is part of the master's degree in the Biodiversity and Ecosystem Conservation branch. The subject comprises theoretical and practical topics on aspects of the island theory help in the management and sustainability of both the terrestrial and the aquatic environment. In addition, it deals with geodiversity as a support for biodiversity and how organisms and ecosystems are affected by elements of the geological environment (lithology, structure, geomorphological features and dynamics of environments) that are involved in the characterization, delimitation and evolution of habitats.

The student should end up being able to understand the problems of fragmentation in order to conserve habitats. Ecosystem conservation is the best way to conserve biodiversity.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

The student should have knowledge of ecology, botany, zoology, microbiology, geology, palaeontology and statistics.

OUTCOMES

2148 - M.D. in Biodiversity: Conservation and Evolution

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- Be able to access to information tools in other areas of knowledge and use them properly.

LEARNING OUTCOMES

At the end of the course, the student will be able to:

- Know how to assess the need for geological information contained in a biology or environmental report

- Have a sound basic knowledge of island theory.

- Be familiar with the techniques used to study patterns in island biogeography.

- Be able to detect patterns of island biogeography in fragmented environments.

- Know how to compare different environments and samples.

- Use theoretical models applied to real data and recognition of the adequacy (or inadequacy) of real data to models.

- Acquire the ability to work in groups, search for and manage information to produce reports.

- Know how to solve problems associated with island theory.

- Know how to propose working methods through the use of appropriate techniques.

- Provide solutions to problems posed by habitat fragmentation.

DESCRIPTION OF CONTENTS

1. The superficial geological environment

Geological processes with expression in the external part of the lithosphere. Lithology, structure and dynamics of geological environments as factors controlling habitats of natural species. Geodiversity and geological heritage. Geological information needed in the preparation of a paper or report on biology or environment. Paleontology and geological heritage. Typology and conservation of paleontological heritage. Protection of natural heritage and GIS tools. Sessions 1-12.

2. The aquatic environment

Isolation and fragmentation. Island theory. Biological effects of fragmentation. Metapopulation models. Metacommunities: Hubbel's neutral theory, spatial and environmental effects; dispersal and ecological niche. Eco-evolutionary dynamics. Study models. Rotifers and cladocerans. Adaptation and life cycles. Sediment records. Ponds as microcosms.

3. Practical applications

Design of protected areas. Large national parks. The area effect and the permanence of large species.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	35,00	100
Seminars	25,00	100
Development of individual work	50,00	0
Study and independent work	10,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	10,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

Theoretical classes will take the form of lectures and discussions in groups or pairs.

Practical activities will take the form of field trips and laboratory activities.

EVALUATION

The course will be assessed by means of written exams and/or the presentation of assignments that will be assessed according to the following table.

Theory and assignments 50%

Seminars 40%

Attendance and participation 10%

REFERENCES

Basic

- Dobson M & Frid C. Ecology of Aquatic systems. 2nd edition. Oxford University Press, Oxford.
- Gray, M. 2004. Geodiversity. Valuing and conserving abiotic nature. Wiley. 434 pp
- Lomolino, M. V. Riddle, B. R. and Brown, J. H. 2005. Biogeography, Third Edition. Sinauer.
- Wetzel R.G. Limnology: Lake and River Ecosystems. 3rd edition. Elsevier, Academic Press, California.
- Whittaker, R,J. 1998. Island Biogeography. Oxford University Press, Oxford.

Additional

- Brönmark C & Hansson L-A. The Biology of Lakes and Ponds. 2nd edition. Oxford University Press, Oxford.
- Brown, J. H., 1995. Macroecology. University of Chicago Press, Chicago.
- Carcavilla Urqui, L.; López-Martínez, J. y Durán Valsero, J. J. 2007. Patrimonio geológico y geodiversidad: investigación, conservación, gestión y relación con los espacios naturales protegidos., I.G.M.E.C. Mus. Geomin. 7, 360 pp.
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- Cox, C. B. & Moore, P. D., 1980. Biogeography: an ecological and evolutionary approach. Blackwell, Oxford.

- Fernández-Palacio, J. M. y Morici, C. (Editores). 2004. Ecología Insular. AEET y Excmo. Cabildo Insular de La Palma. Rumagraf
- Hengeveld, R., 1990. Dynamic biogeography. Cambridge University Press, Cambridge.
- Lampert W & Sommers U. Limnoecology. The Ecology of Lakes and streams. 2nd edition. Oxford University Press, Oxford.
- MacDonald, G., 2003. Biogeography. Introduction to space, time and life. Wiley, NY.
- Meaza G. (Ed.), 2000. Metodología y práctica de la Biogeografía. Ediciones Serbal, Barcelona
- Melendez Hevia, I. 2004 Geología de España. Una historia de seiscientos millones de años.Rueda 277 pp.
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- Rosenzweig, M. L., 1995. Species diversity in space and time. Cambridge University Press, Cambridge.
- Spellerberg, I. F. & Sawyer, J.W.D., 1999. An introduction to applied biogeography. Cambridge University Press, Cambridge.