

Natural Systems Management

Code: 106792
ECTS Credits: 6

2025/2026

Degree	Type	Year
Environmental Sciences	OP	4

Contact

Name: Angela Ribas Artola

Email: angela.ribas@uab.cat

Teachers

Anna Soler Membrives

Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

There are no specific prerequisites for enrolling in this course, although it would be advisable to have passed subjects related to Organismal Biology and Ecology

Objectives and Contextualisation

General Objective:

The primary objective of this course is to introduce students to the fundamental concepts and methodologies of Conservation Biology and Restoration Ecology, emphasizing both their scientific foundations and their practical applications in ecosystem management.

Specific Objectives:

1. To acquire essential knowledge for the study and management of biodiversity, from the population level to the ecosystem level.
2. To identify and understand the key processes that threaten biodiversity.
3. To develop a scientific framework for analyzing contemporary environmental challenges, with the goal of designing more sustainable management strategies.
4. To critically evaluate management practices within the fields of Conservation Biology and Restoration Ecology.

Learning Outcomes

1. CM44 (Competence) Interpret the social, economic and environmental impact of issues related to demographic flows, global change or management in companies.
2. KM57 (Knowledge) Identify the complex network of knowledge necessary to comprehensively address the main contemporary challenges in environmental science.
3. SM56 (Skill) Identify the main threats associated with the use of the natural environment and their corresponding restoration mechanisms on a local and territorial scale.

Content

The course "Management of the Natural Environment" includes aspects related to the use of natural resources, as well as the conservation and restoration of the environment. The course is organized into three main blocks:

Block I: Use and exploitation of natural resources

Hunting and fishing. Agriculture, livestock, and aquaculture. Forestry exploitation. Impact of these uses on biodiversity. Ecological foundations for the sustainable use of natural resources.

Block II: Conservation of the natural environment

Species conservation: threat categories. Biodiversity threats. In-situ and ex-situ conservation. Conservation genetics. Conservation of spaces: protected areas (terrestrial and marine). Connectivity of protected areas. Biological corridors. Ecological foundations for biodiversity conservation.

Block III: Restoration of the natural environment

Introduction to ecological restoration: foundations of restoration ecology. Nature-based solutions. Local-level application examples: restoration of coastal and freshwater communities, soil and forest restoration.

Landscape-level application examples: rewilding and restoration of large ecological processes and recovery of natural disturbance regimes (fires and floods).

Fieldwork practical sessions, related to land management and planning of actions, consists of a guided visit to a natural park. The objective is to gain first-hand, on-site knowledge of the management challenges of a natural park.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classrooms practicals	12	0.48	CM44, KM57, SM56, CM44
Field work practical	8	0.32	CM44, KM57, SM56, CM44
Theory	28	1.12	CM44, KM57, SM56, CM44
Type: Supervised			
Case studies	12	0.48	CM44, KM57, SM56, CM44
Type: Autonomous			
Case studies	24	0.96	CM44, KM57, SM56, CM44

Field work practical	2	0.08	KM57, SM56, KM57
theory	48	1.92	CM44, KM57, SM56, CM44

Guided teaching activities

1. Lectures aim to provide students with the foundational knowledge in the field of sustainable conservation of natural systems and their ecosystem services. Additionally:

- o (i) Students are required to analyze current scientific papers and technical reports.
- o (ii) Case studies are conducted in which students must apply the knowledge acquired to solve real-world scenarios.

2. Practical sessions-including fieldwork, classroom, and computer-based activities-allow students to apply various techniques for the management and conservation of species, habitats, and natural systems. These include:

- Classroom and computer-based practicals: Exercises involving the analysis of biodiversity databases and land-use change data, enabling students to explore and apply some of the concepts and methods covered in lectures.
- Field trip (protected areas): A guided visit to a Natural Park to gain first-hand insight into the daily management and conservation practices of a protected area.

Note: 15 minutes of one class session, within the schedule established by the institution/program, will be reserved for students to complete surveys evaluating the teaching performance and the course/module.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Case studies	30	12	0.48	CM44, KM57, SM56
Midterm exams	70	4	0.16	CM44, KM57, SM56

The assessment of the subject is distributed as follows:

- a) Individual exams on theory and practicals (2 midterms worth 35% each).
- b) Case study resolution (30%).

To participate in the resit exam, students must have previously been assessed in a set of activities that account for at least two-thirds of the total grade for the subject. In order to pass the subject, students must achieve an average score higher than 3.5 in the two midterm exams for these to be averaged with the rest of the grades. If the average score of the two midterms is below 3.5, the midterm grades will not be considered, and the student must take a resit exam. This resit exam accounts for 70% of the final grade. In this resit exam, the requirement of a minimum score of 3.5 remains in order for the other grades (case studies) to be considered; otherwise, the subject will be failed.

For the rest of the assessment activities, there is no minimum grade required to be averaged.

Failure to submit any of the assessment activities within the established period will result in a grade of zero for that activity. If a student does not attend any of the practical sessions, the grade for the corresponding block will be zero.

Students who are unable to attend an individual assessment test for a justified reason (such as illness, death of a first-degree relative, or accident) and provide official documentation to the corresponding professor will have the right to take the test on another date.

This subject does not allow for the possibility of a single assessment.

Bibliography

Bibliography

Conservation:

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Human-Driven Decline of Life on Earth Points to the Need for Transformative Change. *Science* 366:eaax3100. DOI:10.1126/science.aax3100.

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http://www.unep-wcmc.org/system/dataset_file_fields/files/000/000/289/original/Protected_Planet_Report_2014_C

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Van Dyke, Fred., & Lamb, R. L. (2020). Conservation Biology Foundations, Concepts, Applications / by Fred Van Dyke, Rachel L. Lamb. (3rd ed. 2020.). Springer International Publishing.

https://bibcercador.uab.cat/permalink/34CSUC_UAB/1c3utr0/cdi_springer_books_10_1007_978_3_030_39534_6

<https://digitalreport.protectedplanet.net/>

Web Links:

AEMA: Agència Europea del Medi Ambient (EEA; European Environment Agency) www.eea.europa.eu

CBD: Conveni per a la Diversitat Biològica www.cbd.int

Conservation International: www.conservation.org

<https://natura.llocs.iec.cat/>

<https://www.ted.com/topics/conservation>

Medi Ambient, Comissió Europea: http://ec.europa.eu/environment/index_en.htm

Medi natural, Generalitat de Catalunya: amb algú "Medi natural I, Generalitat de Catalunya"

Ministerio de Medio Ambiente d'Espanya: www.magrama.gob.es/es/biodiversidad/temas/default.aspx

IUCN (IUCN): Unió Internacional per la Conservació de la Natura <http://cms.iucn.org>

WCMC: World Conservation Monitoring Centre www.unep-wcmc.org:
www.greenfacts.org/en/digests/index.htm

WWF: World Wide Fund for Nature (World Wildlife Fund) www.panda.org

Ecological Processes:

Baudron (2014) Agriculture and nature: Trouble and strife? <http://dx.doi.org/10.1016/j.biocon.2013.12.009>

Bennett AF (1999) Linkages in the landscape. IUCN.

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Doblas et al. (2013) Conservar Aprovechando. Cómo integrar el cambio global en la gestión de los montes españoles. CREA. <https://digital.csic.es/handle/10261/126871>

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Jordan, C.F. (2022) Evolution from a Thermodynamic Perspective. Implications for Species Conservation and Agricultural Sustainability. Springer. <https://doi.org/10.1007/978-3-030-85186-6>

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Mayor X (2008) Connectivitat ecològica: elements teòrics, determinació i aplicació. Documents de Recerca 13, Consell Assessor per al Desenvolupament Sostenible, Generalitat de Catalunya

Ecological Restoration:

Agència Catalana de l'Aigua (2008a) La gestió i recuperació de la vegetació de ribera. Guia tècnica per a actuacions en riberes. http://acaweb.gencat.cat/aca/documents/ca/actuacions/vegetacio_ribera_complerta.pdf

Mola, I. (Ed.) 2024. Restauración Ecológica: ejemplos de bases técnicas y soluciones prácticas. Fundación Biodiversidad del Ministerio para la Transición Ecológica y Reto Demográfico. Madrid. 635 pp. ISBN: 978-84-931561-1-4

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Howell EA, Harrington JA, Glass SB, 2012. Introduction to restoration ecology. Island Press. *Available in la biblioteca de la Facultat de Ciències i Biociències*

Restoration Ecology. <https://onlinelibrary.wiley.com/page/journal/1526100x/homepage/forauthors.html>

Software

No specific software required

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan	second semester	morning-mixed
(PAUL) Classroom practices	2	Catalan	second semester	morning-mixed
(PCAM) Field practices	1	Catalan	second semester	morning-mixed
(TE) Theory	1	Catalan	second semester	morning-mixed