Universitat Autònoma de Barcelona

2023/2024

Global Change

Code: 42404
ECTS Credits: 9

Degree	Type	Year	Semester
4313784 Interdisciplinary Studies in Environmental, Economic and Social Sustainability	OT	0	1

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Patrizia Ziveri

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Miquel Ninyerola Casals

Prerequisites

Students should preferably hold an undergraduate degree with relevance to environmental sciences, biology, geography or ecology, although students with a background in social and political sciences are also welcome and should be able to follow the course provided they are acquainted with basic principles of Earth and physical sciences.

A reasonable level of English speaking and writing skills are recommended to follow the course.

Objectives and Contextualisation

The understanding of the biological, physical and social processes related to Global Change, and their interaction, are some of the main current challenges, not only because of its complexity, but also due to the necessity of finding solutions to the negative impacts caused by such changes.

The course covers many of the diverse types of impacts related to Global Change on different spatial and temporal scales, mainly focused on different types of ecosystems (terrestrial and marine) as well as its effects on society, and the social responses.

The main objectives of the course are summarized below:

- to identify different types of impacts related with global change

- to explore a wide variety of spatial and temporal scales

- to distinguish other driving forces that influences on global change

- to analyze global change manifestations from land use, biodiversity, global carbon cycle, impacts and effects on ecosystems, both terrestrial and marine.

- to identify different approaches to global change through the analysis of protected areas (biosphere reserves, marine protected areas, rural landscapes....)

Competences

- Analyse how the Earth functions on a global scale in order to understand and interpret environmental changes on the global and local scales.
- Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
- Communicate orally and in writing in English.
- Continue the learning process, to a large extent autonomously.
- Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise research in environmental sciences.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Work in an international, multidisciplinary context.

Learning Outcomes

1. Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
2. Communicate orally and in writing in English.
3. Continue the learning process, to a large extent autonomously.
4. Know the ways in which global change shows itself in different ecosystems.
5. Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise research in environmental sciences.
6. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.

7. Work in an international, multidisciplinary context.

Content

The course is organized as following:

Sub-Module 1: Terrestrial Global Change

1. Welcome and course introduction. Interdisciplinary approach to global change
2. Responding Locally to Global and Globalizing Changes
3. Organisms and distribution on Earth
4. Forest Management as a key factor of global change. Sustainable forest management and its revalorization
5. Forest health
6. Acceleration of the hydrological cycle under global warming.
7. Environment and human health
8. The Conceptual Framework of (Urban) Ecosystem Services and Green Infrastructure
9. Assessing (Urban) Ecosystem Services: Methodological Approaches
10. Oral presentations

Sub-Module 2: Marine Global Change

1. Introduction to ocean, climate, and global change. The perturbation of the carbon cycle and the consequences on the marine ecosystems and biogeochemistry
2. Cumulative pressures on the marine system. Marine pollution, marine litter and micro-plastics
3. Marine historical ecology and paleo-perspective. Ocean governance for sustainability, challenges, options, and the role of science. Marine Protected Areas, ocean conservation and restoration.
4. Oral presentations

Sub-Module 3: Field trips

- New trends in rural/forest management in Mediterranean landscapes (Montseny and Badalona)

Methodology

Teaching and discussions will occur during lectures, guided by particular readings assigned in advance by individual instructors.
The course also includes fieldworks to explore local-scale manifestations of Global Change impacts.

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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures	42	1.68	5, 2, 4, 7

Theory lessons in fieldwork	6	0.24	4, 3, 7
Type: Supervised			
Fieldwork	6	0.24	4, 6
Tutorship	34	1.36	5, 6, 1
Type: Autonomous			
Oral presentation training	40	1.6	5, 4, 6, 3, 7
Reading articles, books and studying for each of the given lectures and the final exam	91	3.64	5, 4, 6, 1, 3

Assessment

This module does not offer Single Assessment, as agreed with the coordination of the degree and with the Dean's Office of the Faculty of Sciences.

Students will be assessed on the basis of:

- A final exam that will last 3 hours and cover most aspects of the course. Students will have limited space to answer each of these questions and will have to prove that they have understood and master key concepts and ideas introduced during the course.

- In the case of Forest health, a take-home test will be provided to grade this subject.

- Two oral presentations corresponding to two topics addressed during the course.

- Fieldworks in oder to prove the local effects of Global Change in a Mediterranean landscape

- Their assistance and participation in class.

The final mark will be the weighted average of the following assessments:

- Final exam: 50%

- Two oral presentations: 30% (15% each)

- Fieldwork: 20% (10% each)

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Fieldwork	20%	0	0	4, 3, 7
Final Exam	50%	3	0.12	2, 6, 1
Two oral presentations	30%	3	0.12	5, 4, 6, 1, 3, 7

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Software

Knowledge of GIS is an option valued in the subject.