



IDENTIFYING DATA

Global change

| | | | | |
|-------------------|--|----------|------|------------|
| Subject | Global change | | | |
| Code | V02M179V01218 | | | |
| Study programme | Máster Universitario en Biodiversidad Terrestre: Caracterización, conservación y gestión | | | |
| Descriptors | ECTS Credits | Choose | Year | Quadmester |
| | 3 | Optional | 1st | 2nd |
| Teaching language | Spanish English | | | |
| Department | | | | |

| | | | | |
|-------------|--|--|--|--|
| Coordinator | Iglesias Briones, María Jesús | | | |
| Lecturers | Iglesias Briones, María Jesús Muñoz Sobrino, Castor Rodeiro Iglesias, Javier | | | |
| E-mail | mbriones@uvigo.es | | | |

| | | | | |
|---------------------|---|--|--|--|
| Web | | | | |
| General description | <p>Since the Industrial Revolution and with greater intensity since the mid-twentieth century, our planet is experiencing a set of global environmental changes that derive from the exponential increase of the human population and, consequently, the rate of resource utilization. Human activities involve profound transformations in the use of the land, global biogeochemical cycles, the abundance and distribution of species, and the structure and functioning of ecosystems. In this course, students are expected to know the scales and components involved in global change, understand its main effects on terrestrial ecosystems, and become familiar with the main international programs that study this discipline.</p> | | | |

Training and Learning Results

| | | | | |
|------|--|--|--|--|
| Code | | | | |
|------|--|--|--|--|

Expected results from this subject

| | |
|--|-------------------------------|
| Expected results from this subject | Training and Learning Results |
| <input type="checkbox"/> Ability to identify the main components, natural and anthropogenic, of global change <input type="checkbox"/> Ability to identify the effects and adaptations to climate changes <input type="checkbox"/> Ability to identify, evaluate and foresee the effects of environmental changes on biodiversity at all levels (species, habitats, ecosystems, landscape and social and economic aspects) <input type="checkbox"/> Ability to understand, apply and develop methodologies to evaluate and mitigate environmental changes <input type="checkbox"/> Capacity to correctly apply the international and national Directives and regulations (IPCC, Climate Action, Spanish Environmental Evaluation 21/2013, etc.) <input type="checkbox"/> Ability to identify the effects of climatic variables on the soil carbon balance <input type="checkbox"/> Ability to evaluate the contribution of soils to carbon sequestration <input type="checkbox"/> Ability to develop strategies to increase the carbon retention potential by soils | |

Contents

| | | |
|---------------------------------|--|--|
| Topic | | |
| Introduction to Global Change | Scales and components | |
| General trends in Global Change | IPCC scenarios and International Protocols | |

| | |
|--|--|
| Evidences of Global Change in Terrestrial Ecosystems | 1. Responsible factors for the observed biodiversity changes; extinctions and adaptations 2. Climate change effects across different biomes 3. Changes in atmospheric composition; biogeochemical changes; sources and sinks |
| Long-term perspectives | Global Change in the past |
| Practical activities | Analysis and interpretation of climate data and proxies Sustainable scalable methods of mitigation and adaptation |

Planning

| | Class hours | Hours outside the classroom | Total hours |
|--------------|-------------|-----------------------------|-------------|
| Lecturing | 14 | 28 | 42 |
| Case studies | 5 | 4 | 9 |
| Seminars | 1 | 0 | 1 |
| Essay | 0 | 20 | 20 |
| Presentation | 3 | 0 | 3 |

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

| | Description |
|--------------|---|
| Lecturing | Lectures on the different topics |
| Case studies | The cases can refer to any of the components of the global change and require the critical analysis of recent literature and interpretation of data and proxies |
| Seminars | Answering questions and solving problems |

Personalized assistance

| Methodologies | Description |
|---------------|---|
| Lecturing | Answering questions and solving any problems that might arise |
| Tests | Description |
| Essay | Solving any potential issues |

Assessment

| | Description | Qualification | Training and Learning Results |
|--------------|--|---------------|-------------------------------|
| Lecturing | Attendance and active participation | 30 | |
| Essay | Document describing the main idea, the phases of the project, the parameter/s to be mitigated and their measurement, the expected economic results and its scalability | 30 | |
| Presentation | Public defense and debating skills | 40 | |

Other comments on the Evaluation

Sources of information

Basic Bibliography

Canadell, Josep G., Pataki, Diane E., Pitelka, Louis F. (Eds.), **Terrestrial Ecosystems in a Changing World**, Springer, 2007

Complementary Bibliography

IPCC, **Global Warming of 1.5 °C**, 2018

IPCC (2019), **Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems**,

Recommendations