



IDENTIFYING DATA

Climate change

Subject	Climate change			
Code	001G261V01702			
Study programme	(*)Grao en Ciencias Ambientais			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	4th	1st
Teaching language	Spanish			
Department				
Coordinator	Castro Rodríguez, María Teresa de Seijo Coello, María del Carmen			
Lecturers	Castro Rodríguez, María Teresa de García Feal, Orlando Seijo Coello, María del Carmen			
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Web				
General description	The climate change suffered by the Earth from the moment of its formation to the present is studied. In the present climate, the change that takes place in the atmosphere, on the surface and in the ocean is analyzed separately. Subsequently, the effect of climate change on biodiversity is analyzed. Finally, resources and management of mitigation and adaptation to climate change are described.			

Competencies

Code	
A3	Students will be able to gather and interpret relevant data (normally within their field of study) that will allow them to have a reflection-based considered opinion on important issues of social, scientific and ethical nature.
A4	Students will be able to present information, ideas, problems and solutions both to specialist and non-specialist audiences.
B1	Students will acquire analysis, synthesis and information-management skills to be applied in the food and agriculture and environmental sectors
B2	Students will acquire and apply teamwork abilities and skills.
C3	To be familiar with the temporal and spatial dimensions of environmental processes.
C10	To be familiar with concepts linked with climate and global change.
C22	To be familiar with the fundamentals of weather forecasting and the analysis of climate phenomena.
D1	Capacity of analysis, organization and planning.
D3	COral and written communication in the native language and foreign
D4	Ability of autonomous learning and information management.
D5	Ability of problem solving and decision making
D9	Team of interdisciplinary nature

Learning outcomes

Expected results from this subject	Training and Learning Results			
Students, in addition to knowing and understanding the basic competences of the subject and the general competences of the degree, must develop a series of necessary transversal competences such as acquiring skills and abilities in team work and in autonomous work, in the synthesis and transmission of information as well as problem solving and decision making.	A3	B1	C3	D1
	A4	B2	C10	D3
			C22	D4
				D5
				D9

(*)

Contents

Topic

Part I. Climate Change Subject 1. Climate Change from the origin of the Earth.	1.1 Definition of climate. 1.2 Climatic system. 1.3 Reconstruction of the climate. 1.4 Climatic variability. 1.5 Characterization of the climate in the different periods of the Earth.
Part I. Climate Change Subject 2. Present Climate change in the atmosphere.	2.1 Global temperature evolution from the 190th to the 21st Century. Trends. 2.2 Evolution of the ice cover in the different regions of the planet. 2.2.1 Ice cover trends. 2.3 Variability of the atmospheric humidity. 2.3.1 Humidity trends. 2.4 Evolution of global clouds coverage. 2.5 Variations in the atmospheric circulation.
Part 1. Climate Change Subject 3. Present climate change in the ocean.	3.1 Global temperature and salinity changes. 3.1.1 Temperature trends. 3.1.2 Salinity trends. 3.2 Changes in the sea level rise. 3.2.1 Sea level rise trends. 3.3 Biochemical changes in the ocean. 3.3.1 Trends in biochemical variables.
Part II: Climate Change and biodiversity Subject 4. Effect of the climate change on the vegetal biodiversity	4.1 Evidences of the climate change and its characteristics. 4.2 Main climatic elements which determines the plant development and growth. 4.3 Influence of meteorological parameters on the plants periodic phenomenons. 4.3 Effects on the agriculture.
Part II. Climate Change and biodiversity Subject 5. Mitigation and adaptation	5.1 Resources to improve the present energetic system. 5.2 Management of forest resources and of crops.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	28	56	84
Seminars	14	28	42
Problem and/or exercise solving	0	24	24
Essay questions exam	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	In the masterlessons the teacher will explain the concepts of each subject. Support material will be: projection, blackboard, etc. Summary subjects will be uploaded in the platform Teledocencia of the University of Vigo (http://fatic.uvigo.es).
Seminars	Analysis of temporal series (perpetual years, interannual variability, anomalies, tendencies) of different variables both atmospheric and oceanic (tidal elevation, air temperature, ocean temperature, salinity and atmospheric indices like NAO, EA) Resolution of exercises and practical cases. Analysis of documentation on the subject and of audiovisual.

Personalized assistance

Methodologies Description

Lecturing	Through the platform FAITIC the student can access to the content of each subject and to the different activities proposed. Personal attendance will take place during tutorials and seminars. Tutorials: Monday from 16:00 to 18:00 and Wednesday from 9:00 to 11:00
Seminars	Through the platform FAITIC the student can access to the content of each subject and to the different activities proposed. Personal attendance will take place during tutorials and seminars. Tutorials: Monday from 16:00 to 18:00 and Wednesday from 9:00 to 11:00

Assessment

Description	Qualification	Training and Learning Results
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Problem and/or exercise solving	Resolution of practical cases and exercises proposed in seminars.	40	A3	B2	D5 D9
RESULTS FROM LEARNING EVALUATED: RA1.					
Essay questions exam	Evaluation of the main aspects of the subject	60	A3 A4	C3 C10 C22	D3

Other comments on the Evaluation

It is mandatory the attendance to lessons and especially to seminars.

The course is divided into two parts. Both parts will be averaged if and only if a minimum mark of 4.5 out of 10 is obtained in each part. In addition, to pass each part the students must have a mark of 5 out of 10 both in the of short answer tests and in the resolution of practical cases and exercises.

The students that cannot attend the course must justify it properly. The evaluation will be carried out by means of alternative activities proposed by the teacher.

Examinations: End of degree: October 3rd, 2019 (16:00). January 20, 2020 (10:00). June 26, 2020 (16:00).

In case of error in the transcription of the dates of examinations, the valid dates will be the ones officially approved and published in the board of announcements and in the web of the Centre.

Announcement end of degree: The student will only be evaluated with this exam that will be the 100% of the final mark.

Sources of information

Basic Bibliography

Complementary Bibliography

Antón Uriarte Centolla, **Historia del Clima de la Tierra**, Eusko Jaurlaritzaren Argitalpen Zerbitu Nagusia,

Intergovernmental Panel on Climate Change, **Climate change 2007: the physical science basis**, Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on C,

Elias F. & Castellví F., **Agrometeorología**, Mundi Prensa,

Mavi H.S. & Tupper G.J., **Agrometeorology**, Food Products Press.,

Cambio climático y biodiversidad, IPCC,

Recommendations

Subjects that continue the syllabus

Terrestrial ecosystems pollution/O01G261V01923

Physical climatology/O01G261V01916

Air pollution/O01G261V01918

Subjects that are recommended to be taken simultaneously

Aerobiology/O01G261V01917

Subjects that it is recommended to have taken before

Meteorology/O01G261V01912