



1. General information

Course: METEOROLOGY AND CLIMATOLOGY**Code:** 37319**Type:** CORE COURSE**ECTS credits:** 6**Degree:** 340 - UNDERGRADUATE DEGREE PROGRAMME IN ENVIRONMENTAL SCIENCES**Academic year:** 2022-23**Center:** 501 - FACULTY OF ENVIRONMENTAL SCIENCES AND BIOCHEMISTRY**Group(s):** 40**Year:** 3**Duration:** First semester**Main language:** Spanish**Second language:****Use of additional languages:****English Friendly:** Y**Web site:****Bilingual:** N**Lecturer:** MIGUEL ANGEL GAERTNER RUIZ VALDEPEÑAS - Group(s): 40

Building/Office	Department	Phone number	Email	Office hours
Sabatini / 0.18	CIENCIAS AMBIENTALES	926051752	miguel.gaertner@uclm.es	Tuesday from 12 noon to 1 p.m., Thursday from 11 a.m. to 1 p.m. and from 3 p.m. to 6 p.m., by appointment by email.

Lecturer: CLEMENTE GALLARDO ANDRES - Group(s): 40

Building/Office	Department	Phone number	Email	Office hours
Sabatini 0.19	CIENCIAS AMBIENTALES	926 05 14 53	clemente.gallardo@uclm.es	Tuesday and Wednesday from 3:00 p.m. to 6:00 p.m. by appointment by email.

2. Pre-Requisites

No prerequisites

3. Justification in the curriculum, relation to other subjects and to the profession

The fundamental objectives of this subject are to study the basic elements and principles of the Physics of the Atmosphere and Climatology, with special attention to the aspects of greater environmental relevance. It is a course in which the fundamental physical concepts are displayed in a descriptive way together with practical applications of environmental interest. In fact, in the field of Anglo-Saxon universities this type of subject is usually given the name of Atmospheric Environment.

The purpose of this course is that the student acquires the basic knowledge in a gradual and orderly manner, so that the new concepts are explained with the previous ones in mind, in order to progressively perceive that the atmosphere is a system complex and interactive that is governed by physical laws.

The consequence of these objectives is the understanding of the environmental concepts in which the atmosphere is involved, both in the framework of other subjects of the curriculum and in the development of the profession of environmentalist.

4. Degree competences achieved in this course

Course competences

Code	Description
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
E01	Ability to understand and apply basic knowledge.
E03	Awareness of the temporal and spatial dimensions of environmental processes
E05	Capacity for qualitative data interpretation
T01	To know a second foreign language.
T02	To know and apply the Information and Communication Technologies (ICT).
T03	To use a correct oral and written communication.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To know the atmospheric observation systems and the methods of meteorological analysis and prediction.

Learn to relate environmental phenomena to the principles of physics that explain them. Especially those related to meteorological, climatological, air, noise and radiation pollution processes.

To understand the components of the climate system, the complex interactions between them and climate variability at different time scales.

6. Units / Contents

Unit 1: The Earth's atmosphere.

Unit 2: The energy balance.

Unit 3: The temperature.

Unit 4: The atmospheric humidity and its condensation.

Unit 5: Atmospheric stability and cloud development.

Unit 6: Precipitation.

Unit 7: The wind.

Unit 8: The global circulation of the atmosphere.

Unit 9: Air masses, fronts and pressure systems.

Unit 10: Circulation systems at regional and local scales.

Unit 11: Weather analysis and forecasting.

Unit 12: The meteorology of atmospheric pollution.

Unit 13: Climatic factors and climate classifications.

Unit 14: Global climates.

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB05 E01 E03 E05	1.4	35	N	-	Classes in which the theoretical contents will be developed. The presentations used will be available to the student on the virtual platforms.
Mid-term test [ON-SITE]	Assessment tests	CB05 E01 E03 E05 T03	0.08	2	Y	N	There will be a partial liberatory mid-term test of the first part of the syllabus that will evaluate knowledge acquired up to that moment. This activity will be recoverable in both the ordinary and the extraordinary call in their respective final tests.
Laboratory practice or sessions [ON-SITE]	Combination of methods	CB01 CB05 E01 E03 E05 T02 T03	0.8	20	Y	N	Practices in the laboratory where the theoretical contents will be applied and expanded. Attendance at practices is a non-recoverable activity, but its evaluation will be recoverable in the extraordinary call after delivery of the report of practices for this call.
Study and Exam Preparation [OFF-SITE]	Self-study	CB01 CB05 E01 E03 E05	3	75	N	-	
Final test [ON-SITE]	Assessment tests	CB01 CB05 E01 E03 E05 T03	0.12	3	Y	Y	There will be a final written test that will evaluate the theoretical knowledge of the subject.
Writing of reports or projects [OFF-SITE]	Group Work	CB05 E03 T01 T03	0.6	15	Y	N	This activity will be recoverable in the extraordinary call through the delivery of the work.
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Final test	30.00%	100.00%	Eminently theoretical final exam. To pass this exam, students must obtain a minimum score of 4 out of 10 and a 5 in non-continuous evaluation. Students who pass the mid-term test have to do only the test of the second part of the subject. The note of the first part will be the one obtained in the mid-term test. Students who have not passed the mid-term test should be examined in this final test of the two parts of the subject. For them the weight of this test will be 60%. For non-continuous assessment students this test will represent 100% of the final mark.
Practicum and practical activities reports assessment	25.00%	0.00%	The reports of the laboratory work will be evaluated for accuracy, clarity, ability to connect content, management of basic concepts, scientific reasoning ability, and ability to solve a problem correctly and completely. The reports will be elaborated in the laboratory sessions. Although the sessions can not be repeated, the reports can be rewritten in the

			extraordinary call.
Theoretical papers assessment	15.00%	0.00%	A work will be proposed to be carried out in group on complementary matters to those dealt with in the agenda.
Mid-term tests	30.00%	0.00%	Around the middle of the semester there will be a mid-term test to evaluate and encourage the continuous study. The test will cover, approximately, half of the agenda and will be liberatory with respect to the final test. To pass this test the student must obtain a minimum score of 4 out of 10.
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

It will be valued that the student demonstrates that he/she has assimilated the basic knowledge of the subject and that can relate them to each other by evaluating the evaluable activities of the subject. Students of exchange programs will be evaluated by an alternative procedure determined by the teacher according to the circumstances of each case. In any case, the subject will only be considered passed if the set of all assessable activities results in a grade of 5 or higher (out of 10).

Non-continuous evaluation:

The evaluation will be 100% done by means of a theoretical exam. The modality assigned by default to the student will be the continuous evaluation. Any student may request the change to the non-continuous evaluation modality (before the end of the class period) by sending an email to the teacher, provided that they have not completed 50% of the evaluable activities

Specifications for the resit/retake exam:

The assessment of the mid-term test, the reports of the practices or the works will be those obtained in the ordinary call, unless some of those activities had been failed. In this case, students can return to deliver the practice reports or assignments or complete the final test. For students who take a non-continuous assessment, the assessment will be made 100% by means of a theoretical exam. The modality assigned by default to the student will be the continuous evaluation. Any student may request the change to the non-continuous evaluation modality (before the end of the class period) by sending an email to the teacher, provided that they have not completed 50% of the evaluable activities. Students of exchange programs will be evaluated by an alternative procedure determined by the teacher according to the circumstances of each case. In any case, the subject will only be considered passed if the set of all assessable activities results in a grade of 5 or higher (out of 10).

Specifications for the second resit / retake exam:

The mark of this call will coincide with the one obtained in the corresponding final test. The course will only be considered passed if the grade is a 5 or higher (out of 10)

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Mid-term test [PRESENCIAL][Assessment tests]	2
Laboratory practice or sessions [PRESENCIAL][Combination of methods]	20
Final test [PRESENCIAL][Assessment tests]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	15
Unit 1 (de 14): The Earth's atmosphere.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	6.1
Unit 2 (de 14): The energy balance.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 3 (de 14): The temperature.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.8
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 4 (de 14): The atmospheric humidity and its condensation.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.8
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 5 (de 14): Atmospheric stability and cloud development.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.65
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 6 (de 14): Precipitation.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 7 (de 14): The wind.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 8 (de 14): The global circulation of the atmosphere.	
Activities	Hours

Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 9 (de 14): Air masses, fronts and pressure systems.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 10 (de 14): Circulation systems at regional and local scales.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 11 (de 14): Weather analysis and forecasting.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 12 (de 14): The meteorology of atmospheric pollution.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 13 (de 14): Climatic factors and climate classifications.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Unit 14 (de 14): Global climates.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.25
Study and Exam Preparation [AUTÓNOMA][Self-study]	5.3
Global activity	
Activities	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	35
Mid-term test [PRESENCIAL][Assessment tests]	2
Laboratory practice or sessions [PRESENCIAL][Combination of methods]	20
Final test [PRESENCIAL][Assessment tests]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	15
Study and Exam Preparation [AUTÓNOMA][Self-study]	75
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Ahrens, C. Donald	Meteorology Today: An Introduction to Weather, Climate, and the Environment	Thomson Brooks/Cole		0-534-37198-1 (CD-RO	2003	
Aguado, Edward	Understanding weather and climate	Pearson/Prentice Hall Ediciones		0-13-154787-9 (CD)	2007	
Font Tullot, Inocencio	Climatología de España y Portugal	Universidad de Salamanca		84-7800-944-2	2000	
Moran, Joseph M.	Meteorology : the atmosphere and the science of weather	Prentice Hall		0-13-266701-0	1997	