

25214 - Meteorology and climatology

Syllabus Information

Academic year: 2023/24

Subject: 25214 - Meteorology and climatology

Faculty / School: 201 - Escuela Politécnica Superior

Degree: 571 - Degree in Environmental Sciences

ECTS: 6.0

Year: 2

Semester: First Four-month period

Subject type: Compulsory

Module:

1. General information

This subject provides scientific explanations to the main meteorological and climatological phenomena using strict physical-mathematical reasoning in most of the Meteorology topics, and with a more descriptive methodology in the Climatology topics. In order to follow the subject it is recommended to have passed the first year subject Physical Bases of the Environment . During the semester, continuous study and work are essential.

The contents of this subject serve as the basis for other subsequent subjects such as Air Pollution, Clean Technologies, Renewable Energies, Natural Risks, Ecology I and Aquatic Ecosystems.

This subject is aligned with the Sustainable Development Goal (SDG) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>) no. 13, so that the acquisition of the learning results of the subject contributes to some extent to its achievement.

2. Learning results

1. -Enunciate, synthesize, analyse, relate and apply the principles and fundamentals of Atmospheric Dynamics, Elements and -Climatic Factors, and Climate Change.
2. -Interpret quantitatively and qualitatively the results obtained in the satisfactory resolution of certain cases based on phenomena and processes related to the environment.
3. -Express adequately, in substance and form: clarity, organization..., both orally and in writing, the methods, processes, results obtained and their analysis in the cases entrusted for study.
4. -Elaborate works and laboratory reports making an adequate use of ICT (word processing, spreadsheet, bibliographic searches on the internet...) in relation to the previous phenomena.
5. -Execute laboratory work in which the student demonstrates that they are able to make an adequate use of basic instrumentation in Meteorology (perform measurements of solar irradiation depending on the angle, relative humidity, adiabatic coefficient and air density, ...)
6. -Operate simple climate change simulators.
7. -Analyse and interpret meteorological and climatological information (thermal regime, rain, winds, insolation, relative humidity, surface and altitude maps, other climatic data, etc.)

Learning results 1, 2, 4, 6 and 7 are directly related to Objectives 13.1, 13.2 and 13.3 of Sustainable Development Goal 13: Climate action. Adopt urgent measures to combat climate change and its effects.

3. Syllabus

Block I. Meteorology:

Topic 1: Introduction

Topic 2: Atmosphere

Topic 3: Energy balance in the atmosphere

Topic 4: Thermodynamics of the atmosphere

Topic 5: Atmospheric phenomena

Topic 6: Atmospheric dynamics

Block II. Climatology:

Topic 7: The climate

Topic 8: Climate classifications

4. Academic activities

Participative master class: 33 hours. The contents of the subject will be explained, encouraging the participation of the students.

Problem solving: 8 hours. Several problems will be solved in the classroom.

Laboratory and/or computer practice: 10 hours. Performance of 5 practices in pairs, on the contents of the subject. Practical work: 7 hours. Relating meteorological and climatological content to the environment and SDG 13.

Individual and group independent study / work: 88 hours. It includes preparation of practice reports, preparation of the paper, study of theory and problem solving.

Assessment test: 4 hours.

5. Assessment system

The subject will be evaluated only in the global evaluation modality by means of the following activities:

1. -Written examination: 70% of the final grade. It will comprise problems, multiple-choice questions and short questions. A grade of 4.5/10 is required to pass the subject.

2. -Practice reports and previous questionnaires: 20% of the final grade A grade of 5/10 is required to pass the subject.

3. -Practical work: 10% of the final grade. The presentation and defence of the work in the classroom is included. It is a voluntary activity but in any case it will account for 10% of the final grade.

The subject will be passed if the final grade is ≥ 5.0 if the conditions of tests 1 and 2 are met. If the final grade is ≥ 4.5 but these conditions are not met simultaneously, the subject will be failed with a 4.5 as the final grade. The detailed definition of the evaluation system will be explained in the presentation of the subject.

Success rates in previous years:

2018/19	2019/20	2020/21	2021/22
80,00%	74,29%	78,79%	86,11%

Both the practical work and the exam deal with Meteorology and Climatology topics related to the ODS