COURSE DATA

Data Subject	
Code	33785
Name	Climatology
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
1318 - Degree in Geography and the Environment	Faculty of Geography and History	1	Second term

Subject-matter

Degree	Subject-matter	Character
1318 - Degree in Geography and the Environment	595 - Climatology	Obligatory

Coordination

Name	Department
PEREZ CUEVA, ALEJANDRO	195 - Geography

SUMMARY

By title of Geography, the study of the weather is critical for understanding the physical and human environment. The climate conditions the ground modeling, water resources, the distribution of living things on the planet and human activities. Following the introduction in the main components of the physical environment in the first quarter, this course explores the knowledge of the atmosphere, the dynamic processes that determine the weather, atmospheric circulation and distribution of world climates. It also introduces students to the key climate-male interaction in the current context where climate change is becoming more and more important

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

No

OUTCOMES

1318 - Degree in Geography and the Environment

- Have capacity for analysis and synthesis.
- Have oral and written communication skills in one's own language and in a foreign language.
- Be able to work independently.
- Be able to work in interdisciplinary teams.
- Show motivation for quality, responsibility and intellectual honesty.
- Learn about physical geography.
- Learn about methodology and fieldwork.
- Be able to relate the natural environment and the social and human spheres.
- Analyse and value landscapes from a spatial-temporal perspective.
- Learn basic techniques for fieldwork in geography and particularly for reading and interpreting the landscape in geographic terms.

LEARNING OUTCOMES

1. Understanding atmospheric processes that determine climate types and distribution of climates in the world.

2. Understanding how the climate system and climate interactions with the environment, highlighting the importance of climate-man interaction.

Specific objectives:

1) Develop skills for the analysis and interpretation of climate data

2) Knowledge of the main features of the atmospheric circulation, climate types and interpretation of weather maps

3) Knowledge of the characteristics, structure and dynamics of air masses

4) Identification of the climates of the world from the analysis of climatic variables (temperature, precipitation)

5) Knowledge of the global distribution of climate
of climate change is becoming more and more important

DESCRIPTION OF CONTENTS

1. Introduction to the Climatology

1.1. Weather and climate
1.2. The global climate system
1.3. Variability and climatic change

2. The atmosphere: composition and structure

2.1. The atmosphere: thickness and composition.
2.1.1. Ozone
2.1.2. Greenhouse gases (GHG)
2.1.3. Water vapor
2.2. Vertical structure of the atmosphere
2.2.1. Structure by composition
2.2.2. Thermal structure

3. Solar energy and global warming

3.1. Physical Concepts
3.1.1. Heat and temperature
3.1.2. Forms of heat transmission
3.1.3. Electromagnetic radiation. Radiation laws
3.1.4. Solar radiation and terrestrial radiation
3.2. Global sunshine on the planet
3.2.1. Radiation Processes
3.2.2. Heat the outer limit of the atmosphere
3.2.3. Heat stroke
3.3. Radiation balance
3.3.1. Short wave
3.3.2. The long wave and the "greenhouse effect"
3.3.3. Global energy balance
3.3.4. Climate change
3.4. Geographic factors and horizontal energy transfers
3.5. Balloon temperatures
3.5.1. Factors that influence the distribution of temperature
3.5.2. Thermal Variations

3.5.3. Global distribution of temperatures

4. Atmospheric humidity and precipitation

4.1. Atmospheric humidity
4.1.1. Concept and measurements of humidity
4.1.2. Evapotranspiration
4.1.3. Condensation
4.2. Stability and atmospheric instability
4.2.1. Adiabatic processes.
4.2.2. Vertical gradients and instability
4.2.3. Absolute stability and thermal inversions
4.2.4. The foehn effect
4.3. Precipitation
4.3.1. Genesis
4.3.2. Types of precipitation
4.3.3. Aridity and drought
4.3.4. Global distribution of rainfall

5. Atmospheric humidity and precipitation Global atmospheric circulation

5.1. Pressure and wind
5.1.1. The pressure and laws of the atmospheric movement
5.1.2. The horizontal movement
5.1.3. Convergence and divergence
5.1.4. Principles of conservation of the atmospheric movement
5.2. Global Atmospheric Circulation
5.2.1. Planetary pressure belts
5.2.2. Planetary wind system
5.2.3. Global circulation models

6. Air masses

6.1. Barotropic and baroclinic atmosphere
6.2. Origin and types of masses of air. Modifications of air masses
6.3. Cyclogenesis
6.3.1. Cycllogenesis of the "polar front" and types of fronts
6.3.2. Other phenomena of cyclogenesis: tropical cyclones,
Tornadoes, cold drops
6.4. Weather maps: analysis and interpretation

7. The climates of the world

7.1. The climatic classification of Köppen
7.2. Dry climates
7.3. Hot and humid climates
7.4. Temperate climates
7.5. Continental climates
7.6. Cold climates

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Other activities	15,00	100
Classroom practices	15,00	100
Development of group work	10,00	0
Development of individual work	10,00	0
Study and independent work	20,00	0
Preparation of evaluation activities	15,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	20,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

Lectures, exercises classes and workshops

EVALUATION

Final examination of theoretical and practical (80%) and continuous assessment (20%).

Continuous assessment exercises and seminars will not be recoverable

In second call, the qualification of the seminars and exercises of continuous evaluation will be kept

REFERENCES

Basic

- Cuadrat, J.M. i Pita, M.F. 1997. Climatología. Madrid, Cátedra. 496 pp.
- Martín Vide, J. 1991. Fundamentos de Climatología Analítica. Madrid, Síntesis.
- Rosselló, V.M., Panareda, J.M. i Pérez, A. 1994. Geografia Física, Valencia, Universitat de València, 438 pp

Additional

- Martín Vide, J. 2005. Los mapas del tiempo. Davinci Continental. Colección Geoambiente XXI nº 1, Mataró.
- Barry, R.G. i Chorley, R.J. 1992. Atmósfera, tiempo y clima. London, Routledge, 392 pp.
- Martín Vide, J. y Olcina Cantos, J. 2001. Climas y tiempos de España. Madrid. Alianza Editorial, 258pp.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

ACADEMIC YEAR 2020-2021 (2nd TERM)

Name and code

CLIMATOLOGY

33785

SEMI-PRESENTIAL TEACHING

1. Contents

The contents initially included in the teaching guide are maintained

2. Workload and time schedule

The activities and their hours of dedication in ECTS credits marked in the original course guide will be kept. Theoretical and practical classes attendance will be 100%. Supplementary activities (weekly hour O: total 15 h.) may require attendance (field trips, seminars) or could be online, and will be specified at the beginning of the term in the Annex to the Course Guide, like the rest of the teaching planning.

3. Teaching Methodology

Theory and practice classes that may be complemented with different types of materials and activities in the Virtual classroom.

Tutorials will be done online (through the UV corporate mail) or face-to-face by prior appointment with the teacher.

If the sanitary situation changes and no access to the University facilities is possible, teaching and tutorials will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.

4. Evaluation

The evaluation criteria established in the Course Guide are kept.

If the University facilities were closed on the dates set in the official calendar for the final exam, the face-to-face exam would be replaced by an online test.

5. Bibliographic references

The recommended bibliography in the Course Guide is kept. If the sanitary situation changes and the access to the recommended bibliography is not possible, it will be replaced by materials accessible online.