

Course guide

480051 - GSIG - Fundamentals of Geosciences and Geographic Information Systems

Last modified: 12/06/2023

Unit in charge:	Barcelona School of Civil Engineering	
Teaching unit:	751 - DECA - Department of Civil and Environmental Engineering.	
Degree:	MASTER'S DEGREE IN SUSTAINABILITY SCIENCE AND TECHNOLOGY (Syllabus 2013). (Compulsory subject).	
Academic year: 2023	ECTS Credits: 5.0	Languages: Spanish

LECTURER

Coordinating lecturer: FRANCISCO JAVIER SANCHEZ VILA

Others: ALBERT FOLCH SANCHO
MARC CARNICERO
PAULA RODRIGUEZ-ESCALES

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

4. The ability to apply, critically and effectively, conceptual frameworks, data collection and processing techniques, applied statistics, mathematical modelling, systems analysis, geographic information systems, information and communication technologies and industrial ecology to meeting the challenges of sustainability and sustainable development.
5. The ability to integrate knowledge of integrated management of the natural environment and natural resources, particularly water and energy resources, in the development and proposal of scientific and technological solutions to challenges to sustainability.
- CE03. The ability to critically analyse theories and perspectives on the traits and properties of the geosphere and biosphere that facilitate and frame the development of socio-environmental systems, as well as the main challenges posed by climate change.

Generical:

CG04. Describe, resolve, prevent and / or alleviate the problems and dysfunctions associated with the processes of development of environmental socio-economic systems with their own approaches to science and technologies of sustainability.

Transversal:

2. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

1. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

Basic:

CB8. Students should be able to integrate knowledge and handle complexity, and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of its conocimientos and judgments.

TEACHING METHODOLOGY

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LEARNING OBJECTIVES OF THE SUBJECT

At the end of the course, the student:

Develops and applies geoscience concepts with originality to the description of problems and situations with environmental impacts, identifying and formulating hypotheses or innovative ideas and submitting them to the test of objectivity, coherence and viability.

He knows and understands the characteristics of the geosphere that facilitate and frame the development of socio-ecological systems as well as the main challenges of climate change.

Efficiently obtain, process and analyze geospatial information.

It is able to visualize and manipulate data and to extract information in a Geographic Information Systems environment

STUDY LOAD

Type	Hours	Percentage
Self study	80,0	64.00
Hours medium group	12,0	9.60
Hours small group	9,0	7.20
Hours large group	24,0	19.20

Total learning time: 125 h

CONTENTS

(ENG) 1. Introducción a las geociencias y a los SIG

Description:

introduction

Full-or-part-time: 3h

Theory classes: 3h

(ENG) 2. Geología: rocas, suelos y procesos litorales

Description:

geology

Full-or-part-time: 16h

Theory classes: 3h

Guided activities: 3h

Self study : 10h

(ENG) 3. Meteorología, climatología e hidrología

Description:

hydrology and climate change

Full-or-part-time: 8h

Theory classes: 2h

Guided activities: 1h

Self study : 5h



(ENG) 4. Edafología

Description:

Groundwater. Hydrochemistry. Soil sciences

Full-or-part-time: 11h

Theory classes: 3h

Guided activities: 3h

Self study : 5h

(ENG) 5. Contaminación de agua y suelo

Description:

soil and water pollution

Full-or-part-time: 31h

Theory classes: 3h

Guided activities: 3h

Self study : 25h

(ENG) 6. Tratamiento de datos georeferenciados

Description:

GIS

Full-or-part-time: 56h

Guided activities: 16h

Self study : 40h

ACTIVITIES

(ENG) MAPAS GEOLÓGICOS Y CARTOGRÁFICOS

(ENG) 3. CICLO DEL CARBONO

(ENG) 4. ANÁLISIS DE DATOS Y SIG

(ENG) 5. CONTROL ESCRITO

GRADING SYSTEM

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EXAMINATION RULES.

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