

28721 - Cartography, Geographical Information Systems and Remote Sensing

Información del Plan Docente

Academic Year	2016/17
Academic center	175 - Escuela Universitaria Politécnica de La Almunia
Degree	423 - Bachelor's Degree in Civil Engineering
ECTS	6.0
Course	3
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process designed for this subject is based on the following:

Strong interaction between the teacher/student. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set

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their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The current subject is conceived as a stand-alone combination of contents, yet organized into three fundamental and complementary forms, which are: the theoretical concepts of each teaching unit, the solving of problems or resolution of questions and laboratory work, at the same time supported by other activities

The organization of teaching will be carried out using the following steps:

— **Theory Classes** : Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them in topics and or sections, interrelating them.

— **Practical Classes** : The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.

— **Laboratory Workshop** : The lecture group is divided up into various groups, according to the number of registered students, but never with more than 20 students, in order to make up smaller sized groups.

— **Individual Tutorials** : Those carried out giving individual, personalized attention with a teacher from the department. Said tutorials may be in person or online.

5.2.Learning activities

The programme offered to the student to help them achieve their target results is made up of the following activities...

Programmed learning activities

Involves the active participation of the student, in a way that the results achieved in the learning process are developed, not taking away from those already set out, the activities are the following:

— **Face-to-face generic activities** :

● **Theory Classes** : The theoretical concepts of the subject are explained and

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illustrative examples are developed as support to the theory when necessary.

• **Practical Classes** : Problems and practical cases are carried out, complementary to the theoretical concepts studied.

• **Laboratory Workshop** : This work is tutored by a teacher, in groups of no more than 20 students.

– **Generic non-class activities** :

• Study and understanding of the theory taught in the lectures.

• Understanding and assimilation of the problems and practical cases solved in the practical classes.

• Preparation of seminars, solutions to proposed problems, etc.

• Preparation of laboratory workshops, preparation of summaries and reports.

• Preparation of the written tests for continuous assessment and final exams.

The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the trimester, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the subject file in the Accreditation Report of the degree, taking into account the level of experimentation considered for the said subject is moderate.

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Activity	Weekly school hours
Lectures	3
Laboratory Workshop	1
Other Activities	6

Nevertheless the previous table can be shown into greater detail, taking into account the following overall distribution:

— 40 hours of lectures, with 50% theoretical demonstration and 50% solving type problems.

— 10 hours of laboratory workshop, in 1 or 2 hour sessions.

— 6 hours of written assessment tests, one hour per test.

— 4 hours of PPT presentations.

— 90 hours of personal study, divided up over the 15 weeks of the 2 nd semester.

There is a tutorial calendar timetable set by the teacher that can be requested by the students who want a tutorial.

5.3.Program

The program that the student is offered to help you achieve the expected results includes the following activities. The following table lists the contents to be taught is. These correspond to the topics presented in the course content.

Content

Topic 1: Mapping Applications

Practice 1: cartographic resources management in IDEs

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Item 2: Maps and coordinate systems: General concepts and scales.

Practice 2: managing physical maps

Item 2: Maps and coordinate systems

Practice 3: Working cartographic information

Item 2: Maps and coordinate systems

Practice 4: GIS, options and settings

Item 3: S.I.G. : Basic principles

Practice 5: GIS I

Item 3: S.I.G. : Features, components and functionality

Practice 6: SIG II

Evaluation items 1 and 2

Practice 7: SIG III

Item 3: S.I.G. Structure and analysis of information

Practice 8: SIG IV

Item 3: S.I.G.

Practice 9: SIG V

Item 4: Remote Sensing: Basic Principles.

Practice 10: SIG VI

Item 5: Remote Sensing Interpretation of images.

Practice 11: Aerial Photogrammetry

Item 5: Remote Sensing: Georeferencing

Practice 12: SIG VI

Practice 13: Integrated with GIS mapping work.

Individual tests for practical evaluation.

1. Mapping

1.1. Cartography. Types of maps

1.2. Cartographic production centers.

1.3. digital cartography

Study guide.

a general introduction to the subject and a reminder and fixing previous basics of mapping is provided. Management of cartographic databases available.

Topic 2.

2. Maps: Coordinates.

2.1. Map projection systems. The projection U.T.M.

2.2. Conventional Digital representation and modeling.

2.3. Scale and measurements.

Study guide.

It is intended to provide criteria for understanding the concept of levelto in order to extract quantitative information available mapping and use in Civil Engineering.

Item 3.

3. GIS

3.1. Basics of a Geographic Information System

3.2. GIS features, components, functionality. Metadata. vector and raster models.

3.3. Criteria in the design of the components of a GIS.

3.4. Structuring information.

3.5. Information analysis, spatial analysis procedures.

3.6. Disclosure of information.

Study guide.

It is intended that the student is able to understand and use different Geographic Information Technologies ..

item 4

4. Basic principles of remote sensing.

4.1. Concept of remote sensing. physical principles. Systems and resolutions. Types of platforms.

4.2. Image interpretation. visual and digital analysis.

4.3. geometric correction of images. Georeferencing.

Study guide.

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a study of the different methods to be used for remote sensing is done, knowing the bodies, institutions and companies that produce cartographic material, in order to analyze the suitability of each to the different circumstances of the land and the purpose of work. Learn to fluently read documents to identify geographic facts present on aerial photographs and space images, identifying with reality.

Práctco.

Practice 1.

Management of cartographic information

Practice 2.

Information platforms

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Practice 3.

Basic course in gvSIG

Practice 4.

GvSIG applications

Practice 5.

Obtaining and interpreting images

practice 6

Work integrated design of a GIS model

5.4.Planning and scheduling

Planning & timetable

Class hall sessions & work presentations
timetable

The dates of the final exams will be those
that are officially published at
<http://www.eupla.es/secretaria/academica/examenes.html>.

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The planning orientation shown below

— Week 1, 2, 3 and 4: Topic 1.

— Week 5 and 6: Topic 2.

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— Week 7, 8 and 9 : Topic 3.

— Week 10: Topic 4.

— Week 11: Topic 5.

— Week 11 and 12: Topic 6.

— Week 13: Topic 7.

— Week 14 and 15: Topic 8.

5.5. Bibliography and recommended resources

Resources:

Material	Format
Topic theory notes	Paper/repository
Topic problems	
Topic theory notes	Digital/Moodle
Topic presentations	E-Mail
Topic problems	
Related links	

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Educational software

Web page

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