uc3m | Universidad **Carlos III** de Madrid

| Technologies applied to research III: geographical information systems |

Academic Year: (2023 / 2024)   **Review date: 13-02-2024**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: MOLINA LOPEZ, JOSE MANUEL

Type: Electives ECTS Credits : 3.0

Year : 4 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

 Mathematics, Statistics and Computer Science Module I (Basic training) and the material (subject) of Statistics (Operations Research) Module III (Fundamentals of Engineering)

OBJECTIVES

Cognitive:
* Know the SDI and implementation experiences.
* Become familiar with the concept of GIS and its components.
* Know in detail the operation and applications of the different systems existing location and positioning.
* Know in detail the operation of the systems d einformación (GIS)
* Analyze the GIS system integration and applications arising out edicha integration d.

Procedural / Instrumental
* Know the main experiences and projects developed in GIS.
* Practice with different systems
* Know the GIS (GIS) free and proprietary. Advantages and disadvantages.

Attitudinal
* Ability to generate new ideas (creativity)
* Attitude critical of a GIS system studied.
* Concern Gisy system performance impact on the quality of service levels provided to users.
* Identify new opportunities through the application of innovative technologies.

DESCRIPTION OF CONTENTS: PROGRAMME

The main objective of this course is that the student be able to know what a GIS, its usefulness and the various elements that compose it. Besides the focus will necessarily related sciences such as mapping and geodesy.

Agenda:
* Location and Positioning Systems
* Geographic Information Systems
* Systems Integration Systems Location with GIS
* Data
* Processes
* Technology
* Viewing
* Applications and practical uses
* SIG custodial and free

LEARNING ACTIVITIES AND METHODOLOGY

* Acquisition of knowledge (1.5 ECTS) through lectures, personal study of teaching materials and specialized readings. To facilitate its development students will receive class notes and key reference texts will allow them to complete and deepen in those subjects in which they are most interested.

* Acquisition of practical skills (1.5 ECTS) through exercises and case studies. You can also include the analysis of case studies.

ASSESSMENT SYSTEM

The evaluation system includes continuous assessment of student work (papers, reports of laboratory practice and skills assessment tests and theoretical and practical knowledge), and evaluation through a final written exam will be evaluated globally knowledge, skills and abilities acquired during the course. The shares allocated for each subject vary in the range: 40% -70% (continuous assessment) and 60% -30% (test).

% end-of-term-examination: 40

% of continuous assessment (assigments, laboratory, practicals…):   60

BASIC BIBLIOGRAPHY

 - Junta de Castilla y León Sistemas de Localización e Información Geográfica, Consejería de Fomento JCyL, on-line

 - Junta de Castilla y León Sistemas de Localización e Información Geográfica, Consejería de Fomento JCyL, on-line-2000
 - Olaya, Víctor Sistemas de Información Geográfica, Prentice Hall, 2000

ADDITIONAL BIBLIOGRAPHY

 - Felicísimo, Ángel M Modelos digitales del terreno. Introducción y aplicaciones a las ciencias ambientales, http://www6.uniovi.es/~feli/pdf/libromdt.pdf .