Universitat de Lleida

DEGREE CURRICULUM

THEMATIC CARTOGRAPHY AND GIS

Coordination: ALONSO LOGROÑO, MARIA PILAR

Academic year 2022-23

THEMATIC CARTOGRAPHY AND GIS 2022-23

Subject's general information

Subject name	THEMATIC CARTOGRAPHY AND GIS
Code	101151
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Bachelor's Degree in Geography	1	COMMON/CORE	Attendance-based
Double degree: Bachelor's degree in Geography and Bachelor's degree i Tourism	2	COMMON/CORE	Attendance-based

Course number of credits (ECTS)	6
Type of activity, credits, and groups	

Activity type	PRALAB	TEORIA
Number of credits	2	4
Number of groups	1	1

Coordination	ALONSO LOGROÑO, MARIA PILAR
Department	GEOGRAPHY AND SOCIOLOGY
Teaching load distribution between lectures and independent student work	Presential classes: 60 hours. Autonomous work of the student: 90 hours
Important information on data processing	Consult this link for more information.
Language	Spanish. English as a language of most of the programs used
Distribution of credits	4 teóricos credits 2 of Practicas

THEMATIC CARTOGRAPHY AND GIS 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ALONSO LOGROÑO, MARIA PILAR	pilar.alonso@udl.cat	6	

Subject's extra information

The main purpose of this subject is to enable the student to reach the basic knowledge that allows him to propose and elaborate a thematic map according to a correct cartographic language that can adapt to the reading in the different contexts in which it can have utility , Both academic and professional. The knowledge obtained should be framed in the use of new spatial information technologies, which allow the student to use thematic mapping as a basic tool for spatial analysis. Therefore, with this subject, the student also introduces himself to the fundamentals of Geographic Information Systems and begins to familiarize himself with GIS management skills.

Learning objectives

Students who achieve this subject will be able to:

- Use a vocabulary specific to the cartographic process when analyzing and developing a thematic map.
- Understand the significance of mapping management for territorial analyzes.
- Discuss and critically evaluate cartographic documents.
- To deepen in the techniques and methods of cartographic representation through computer means.
- Develop specific skills related to the knowledge of working techniques, especially those related to obtaining, analyzing, processing and representing geographic information.
- Understand the concept and components of Geographic Information Systems.
- Develop thematic maps through geographic information systems
- Acquire the skills for the instrumental management of the most important computer applications.
- Manage databases.
- Learn the management of GIS programs.

All these objectives translate into the following learning outcomes:

- Familiarity with the usual vocabulary and concepts in the use of mapes
- Reading, understanding and taking advantage of the information on the topographic maps
- Familiarity with the cartographic resources available online
- Connection of the cartographic conventions and traditions
- Capacity to choose the most suitable form of expression from a wide range of graphic resources
- Adequate choice in the use of graphic resources
- Use of thematic mapping programs, both commercial and online
- Full familiarity with the logic of GIS
- Domini of the basic tools of a GIS
- Agility in the relationship of databases and cartography

Competences

Competences

- CB4 To be able to transmit information, ideas, problems and solutions to a specialized and non-specialized audience
- CB5 Know how to develop those learning skills necessary to undertake further studies with a high degree of autonomy
- CG3 Characterize the spatial diversity of the territories
- CE1 Use methods and techniques of analysis and interpretation of statistical sources
- CE3 Express geographical knowledge through thematic mapping
- CE4 Use and treat (manipulate) the information proper to topographic cartography
- CE5 Learning to extract sources of geographic information from existing resources on the internet
- CE13 Acquire the habits of analysis of geographic data to proceed to its orderly and reasoned presentation, either by oral presentation or by written report
- CE14 Learn the management of GIS software in the different functions: data entry, editing and management, queries and spatial analysis
- CT3 Acquire training in the use of new technologies and information and communication technologies
- CT2 Acquire a significant command of a foreign language, especially english

Subject contents

1. Introduction to thematic cartography: cartographic communication;

    1.1. Cartography components;

    1.2.The supports for thematic cartography

    1.3. The graphic semiology (The cartographic signs and codes).

    1.4. The cartographic problems and criteria of cartographic representation.

2. Visual variables in the seva utilització in cartography.

    2.1 Form

    2.2. Size

    2.3. Value

    2.4. Plots

    2.5. Color

    2.6 The combinations of tipus of implantation and visual variables.

3. Introduction to the basic concepts of cartography in digital format through the GIS

3.1. Understanding GIS.

3.2. Components of GIS.

3.3. Main fields of application of GIS.

3.4. The significance of GIS in the matrices referred to the spatial analysis.

3.5. Presentation of different GIS, advantages and disadvantages

3.6. Vector and raster Geographic Information Systems.

4. Input, handling, analysis and output of spatial data

4.1. Principles, instruments and methods for collecting spatial information.
4.2. Creation and management of geographic information databases.
4.3. Infrastructure of Spatial Databases.

5. Initiation to work with GIS through ArcGis

5.1. Management of the Arc Gis program. Explanation of the main modules and the main functionalities.

5.2. The entry of spatial and thematic data in Geographic Information Systems (search for spatial data, preparation of thematic data)

5.3. Initiation and resolution of spatial problems from GIS: Geoprocessing tools. Selection tools by attribute or by location.

Methodology

We will use a participatory methodology alternating the theoretical explanation with the practice that will be carried out on the computer with ArcGIS. Exercises of increasing complexity will be carried out, culminating in the completion of the course work. The assimilation of the concepts of the cartographic process for their application in the elaboration of maps through the use of Geographic Information Systems are the basis of the learning process of this subject. The mapping will be carried out using GIS, which implies the need to work with specific computers and programs. The course will be carried out combining:

1.- Master classes, with exposition by the teacher

2. Practical classes. A series of practices will be proposed in which they will have to demonstrate the mastery of the cartographic concepts and techniques and the use of the GIS tool that will have been explained previously.

3.- Realization learning folder with all the material and the pertinent corrections

4.- Student work. carrying out a work where a territorial problem must be solved in the most effective way through the use of the GIS tool

Alternança tool for classes magistrals and Practices for the coordinator (computer room). The student will have available a virtual campus Differents dossier explaining Totes the theoretical explanations and the development of the practices with detailed instructions on the processes.

Development plan

Master classes are alternated with internships as coordinator.

1. Introduction to thematic cartography. Cartographic communication (2 weeks).

2. Visual variables and their use in cartography (3 weeks).

3. Introduction to the basic concepts of cartography in digital format through GIS (4 weeks).

4. Input management, analysis and output of spatial data (1 week)

5. Introduction to working with GIS through Arc_Gis (5 weeks)

The assimilation of the concepts of the cartographic process with a view to its application in the elaboration of maps through the use of Geographic Information Systems are the basis of the learning process of this subject. The elaboration of cartography will be carried out through geographic information systems, so some concepts related to them will be introduced. The use of computer tools will mean the need to work with computers. The student is provided with a software license so that he can work with the GIS tool.

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Evaluation

L'avaluació de l'assignatura is realitzarà from Qualificació de les diferents Tasques realitzades in següent Proportion:

Evaluation mechanisms	Description	%*
Practices	Learning of the cartographic tools in general and the SIG in particular, through the presentation of a file with the results of the compression of the tool.	40
Evaluation	Written test for the theoretical approaches.	20
Practices with GIS and decartography programs	Realization of a Project where a territorial problem must be solve efficiently with the use of the SIG.	40

TOTAL		100

%: percentage on the final grade.

Students who combine their degree with a full time job have the right to ask for alternative assessment within 5 days after the beginning of the semester. The alternate assessment can also be requested by students who work part-time with schedules that coincide with their classes. For information, please send an e-mail to academic@lletres.udl.cat or ask for information at the Faculty's secretary (Secretaria de la Facultat de Lletres).

If plagiarised material is detected, we will apply what is established in the 'Regulations for the Assessment and Grading of Student Learning in UdL Bachelor's and Master's Degrees'.

Bibliography

Basic bibliography. Available at the library.

- Aguilera Arilla, M.J. y otros (2003): *Fuentes, tratamiento y representación de la información* geográfica. Unidades didácticas de la UNED. Madrid. 421 págs.

- Bertin, Jacques. Semiology of graphics : diagrams, networks, maps / Jacques Bertin. 1967.

- Collado, J.C. y Navarro, J.M. (2013): ArcGis 10 Prácticas paso a paso. Universitat Politècnica de Valencia.

- Escolano, S..(2015) Sistemas de información geográfica. Una introducción para estudiantes de Geografía. Prensas de la Universidad de Zaragoza, Colección Textos docentes, núm. 253

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- Moreno Jiménez, A. (2005): Sistemas y análisis de la Información Geográfica. Manual de *autoaprendizaje con ArcGis*. Editorial Ra-Ma. Madrid. 878 págs.

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- Santos Preciado, J.M. (2011). Los Sistemas de Información Geográfica vectoriales : el funcionamiento de ArcGis / José Miguel Santos Preciado . 1a. ed. ; 1a. reimp. Madrid : Universidad Nacional de Educación a Distancia. Cuaderno de prácticas.

- Santos Preciados, J.M. (2008): Análisis estadística de la información geográfica. Cuadernos de la UNED. Madrid. 395 págs.

Additional bibliography.

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- Burrough, P.A. y McDonnell, R. (2000): Principles of geographical information systems. Oxford University Press.

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Magazines:

Revista Mappemonde: http://mappemonde.mgm.fr/

Revista Mapping España: www.revistamapping.com

The Cartographic Journal: http://www.cartography

Geofocus-Revista Internacional de Ciencia y Tecnología de la Información Geográfica http://www.geofocus.org/index.php/geofocus

Websites related to cartography and information.

- Llista sobre *SIG en espanyol

http://listserv.rediris.es/archives/sig.html

- ESRI

http//WWW,esri.es

- Institut Cartogràfic i Geologic de Catalunya

http://www.icgc.es/

- Instituto Geográfico Nacional

http://www.mfom.es/ign/

- Atles electrònic de Catalunya

.gencat.net/hipermapa/ client/211003/baseaea_high.html /

- INE – Instituto Nacional de Estadística

www.ine.es

- Institut de Estadística de Catalunya

www.idescat.es