DEGREE CURRICULUM

GIS

Coordination: GUERRERO LLADOS, MONTSERRAT

Academic year 2022-23

Subject's general information

Subject name	GIS
Code	101152
Semester	1st Q(SEMESTER) CONTINUED EVALUATION

Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Geography	2	COMPULSORY	Attendance-based
	Double degree: Bachelor's degree in Geography and Bachelor's degree i Tourism	3	COMPULSORY	Attendance-based

Course number of credits (ECTS)	6

Type of activity, credits, and groups	Activity type	PRALAB	TEORIA
	Number of credits	3	3
	Number of groups	1	1

Coordination	GUERRERO LLADOS, MONTSERRAT
Department	GEOGRAPHY AND SOCIOLOGY
Teaching load distribution between lectures and independent student work	1. Face-to-face work (60 hours). During these hours there will be theoretical classes, practical classes and, where appropriate, an invited conference. 2. Self-employment (90 hours). During these hours, the student must go beyond the contents given in the subject by reading the materials given in class and other complementary readings.
Important information on data processing	Consult this link for more information.
Language	Catalan and Spanish. English as a language of most of the programs used

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
GUERRERO LLADOS, MONTSERRAT	montse.guerrero@udl.cat	6	

Subject's extra information

The GIS course is part of the subject "Cartography" of the geography degree curriculum and provides methodological and technical skills for the management and analysis of spatial information. The subject has a strong practical character. It aims to convey the knowledge of the fundamentals of the Geographic Information Systems (GIS) and provide the student with experience in the management of applications and analysis of the information. The efficient and profitable use of GIS must be based on scientific knowledge about geographic information and its methods of analysis, and a good knowledge of cartographic language.

The competences to acquire are fundamental for geographers, especially for those who will devote themselves to the professional exercise-applied researcher. This subject will be complemented by three subsequent GIS courses in the Degree of Geography and two subsequent in the doble bachelor's degree: Geography and Tourism. At the end of the course, the student will acquire the necessary skills to work independently the data with GIS tools in any field.

The use of GIS every day is higher among professionals and scientists of different disciplines, since it allows to manage large volumes of territorial information in all territorial areas.

Learning objectives

Learning outcomes:

- Familiarity with the usual vocabulary and concepts in the use of maps
- Practice of georeferencing at different levels: in the field and a cartographic document
- Reading, comprehension and use of information from topographic maps
- Familiarity with the cartographic resources available online
- Ability to obtain the maximum information from topographic cartography
- Use of thematic cartography programs, both commercial and online
- Full familiarity with the logic of SIG
- Agility in the relation of databases and cartography
- Versatility and adaptability in the use of new cartographic technologies
- Full capacity to design an ideal map for any geographical, physical or human information assumption

Competences

Competences

CG3 Characterize the spatial diversity of the territories

CE2 Know the fundamentals and scientific terminology specific to each branch of Geography

CB4 Power to transmit information, ideas, problems and solutions to a specialized and non-specialized audience

CB5 Know how to develop those learning abilities necessary to undertake further studies with a high degree of autonomy

CE1 Handle and use the methods and techniques of analysis and interpretation of statistical sources

CE3 Express geographical knowledge through thematic cartography

CE5 Learn how to extract geographical information from existing resources on the Internet

CE13 Acquire the habits of analysis of the geographic data to carry out its exhibition organized and reasoned, either through an oral presentation or through a written report

CE14 Learn the management of GIS software in its different functions: data entry, editing and management, queries and space analysis

CT3 Acquire training in the use of new technologies and information and communication technologies

Subject contents

Module 1: Geographic Information System

- Presentation of the subject program; ArcGis and free program alternatives
- Vector and raster language
- The ArcGis package

Module 2: Creation, analysis and exploitation of geographic data

- Databases in GIS
- Spatial queries
- Joins and relationships of tables
- Spatial unions between cartographic bases
- Creation, edition and management of geographic information
- Georeferencing methods
- Georeferencing of historical cartography

Module 3: Spatial Analysis of Vector Data

- Geoprocessing of spatial data
- Network Analyst
- Data collection and management
- GIS in real time

Module 4: Cartographic resources for consultation and download

- Main sources of spatial data
- Spatial data infrastructure (IDE).
- Producers of official cartography
- Open Geospatial Consortium
- Geoportals. Metadata

Module 5: GIS Project

Methodology

1. Master classes.

2. Problem resolution.

3. Carry out learning folder.

4. Drafting of projects.

The development of the subject is supported by the alternation of master classes and practices to the computer, where the teacher guides the student in the management and development of the practice presented. The practices will always develop around a spatial problem that will be given a solution through the use of GIS tools.

The student will also be given a theoretical dossier where the basics of the practices will be developed and also the instructions for developing them.

This year as a novelty, the student will take part in a teaching innovation activity that will consist of the participation of various solidarity maps with the aim of learning to use the technologies for capturing, generating and disseminating geographic information.

Development plan

Classes are held on Mondays and Tuesdays. During the course there will be specific practice sessions.

Formative activity	Hours for the training activity
1.- Exposition of basic contents (master class)	20
2.- Practices in the computer classroom or virtual under the supervision of the teacher	40
3.- Self-employed work of the student	90
Total	150

Evaluation

For the evaluation of this subject, the continuous evaluation process is followed and the weighting of the evidence of evaluation is adjusted to the ECTS. In each one of them, the professor will make the criteria of qualification prior to its correction published.

A) Tests developed in class (50% of the final grade): Consist of practical exercises about the theory and management of a GIS program.

b) Final exam (20% of the final grade) and final work (20% of the final grade): At the end of the course, the student must present a personal work, which contains the approach and implementation of an application "SIG "to an assumption of medium complexity. The subject of the work is chosen by the student with the approval of the teacher.

C) Assistance with participation (10% of the final grade)

To pass the subject, the student must deliver all the practices and jobs required during the course to measure the result of their individual learning.

Students who combine their degree with a full time or partial (matching the classes) job have the right to ask for alternative assessment within 5 days after the beginning of the semester. 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 documentation: pdf files with the development of the syllabus and support material that, as a manual of the subject, the teacher will facilitate the students to the virtual campus (sakai / recursos).

Basic bibliography

- Beltrán López, G. (2012): Geolocalización y redes sociales. Un mundo social, local y móvil. Bubok. España. 257 págs.

- Olaya, V. (2016): Sistemas de Información Geográfica. http://volaya.github.io/libro-sig/.

- Peña Llopis, J. (2006): Sistemas de Información Geografica aplicados a la gestión del territorio. Universidad de Alicante. San Vicente (Alicante)

- 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.

- Beltrán López, G. (2014): Geomarketing. Geolocalización, redes sociales y turismo. @gersonbeltran. España. 281 págs.

- Buzai G. (2021) Geografía del COVID-19: De Wuhan a Luján a la ciudad de burbujas. Buenos Aires Editorial. Buenos Aires. 194 pàgs.

- Dent, Borden D. (2009) Cartography :thematic map design. - 6a. ed. Boston [etc.] : McGraw-Hill, cop.

- Gómez, M. y Barredo, J.I. (2005): Sistemas de información geográfica y evaluación multicriterio en la ordenación del territorio. Madrid, Ra-Ma.

- Madden, M (ed) (2009). Manual of Geographic Information Systems. ASPRS.

-Tomlinson, R. (2008). Pensando en el SIG: planificación de Sistemas de Información Geográfica dirigida a gerentes. ESRI Press.

Magazines:

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

Revista Mapping España: www.revistamapping.com

Journal of Geographical Information Science https://link.springer.com/journal/11442

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

Journal of Geographical Systems. http://link.springer.com/journal/10109

Other Websites related to cartography and information.

- Cartographic resource blogs

http://alpoma.net/carto/

http://www.nosolosig.com/

http://www.worldmapper.org/

- Geoportales:

At European level: http://inspire.ec.europa.eu/

On a Spanish scale: http://www.idee.es/

At the scale of Catalonia: http://www.geoportal-idec.net/geoportal/cat/index.jsp and https://sig.gencat.cat/visors/hipermapa.html

- ESRI

http//www,esri.es

- Cartographic Geologic Institute of Catalonia

http://www.icgc.cat/

- National Geographic Institute

https://www.ign.es/web/ign/portal

- INE – National Institute of Statistics

www.ine.es

- Statistical Institute of Catalonia

www.idescat.es

- Eurostat

http://ec.europa.eu/eurostat/data/database

- Eurostat Geodata

http://ec.europa.eu/eurostat/web/gisco/geodata/referencedata/administrative-units-statistical-units

- European Soil Portal.

http://eusoils.jrc.ec.europa.eu/library/ESDAC/Index.html