

Cartography and Photointerpretation

Code: 102834
 ECTS Credits: 6

Degree	Type	Year	Semester
2501915 Environmental Sciences	OB	2	1

Contact

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Use of Languages

Principal working language: catalan (cat)

Some groups entirely in English: No

Some groups entirely in Catalan: Yes

Some groups entirely in Spanish: No

Prerequisites

There are no prerequisites

Objectives and Contextualisation

The use of geographic documentation in environmental studies is absolutely unavoidable. The precise location of environmental phenomena on the surface of the Earth is a basic fact for the evaluation of its transcendence. In addition, the relative location between those phenomena and the society is of paramount importance for environmental management. Any type of environmental impact study, to name an example of professional activity related to the degree, involves the analysis of sensors (photographs and images) and the interpretation of maps for the production of specialized thematic cartography. In the case, for example, of the analysis of the impact of a forest fire, a possible source would be the remote sensing, which would allow us to quantify the burned perimeter, and a land cover map, which would allow us to analyse the territorial impact of the fire. Another possible analysis would be to find out if the perimeter of the fire affects protected areas, with the availability of a digital layer with the limits of a natural park, etc. This is a simple example since the cartographic analysis is applicable to any representable data in the space (any point, line or polygon). Thus, the objective of the course is to provide the basic knowledge necessary for the accurate production of cartography applied to the environment. In other subjects of the degree (Modelling of Geographic Information, Territorial Planning, etc.) you will have the opportunity to extend this knowledge and to put them to the test.

Competences

- Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
- Analyze and use information critically.
- Collect, analyze and represent data and observations, both qualitative and quantitative, using secure adequate classroom, field and laboratory techniques
- Demonstrate adequate knowledge and use the tools and concepts of the most relevant social science environment.
- Demonstrate concern for quality and praxis.
- Demonstrate initiative and adapt to new situations and problems.
- Quickly apply the knowledge and skills in the various fields involved in environmental issues, providing innovative proposals.
- Teaming developing personal values regarding social skills and teamwork.

- Work autonomously

Learning Outcomes

1. Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
2. Analyze and interpret environmental problems for territorial planning.
3. Analyze and interpret environmental problems using geographic information systems.
4. Analyze and use information critically.
5. Apply mapping tools, including geographical information systems.
6. Demonstrate concern for quality and praxis.
7. Demonstrate initiative and adapt to new situations and problems.
8. Identify geographic processes in the environmental surroundings and to value properly and originally.
9. Know the main territorial and landscape dynamics in Catalonia and Spain.
10. Develop personal values regarding social skills and teamwork.
11. Undertake spatial relationships on different territorial scales through the relationships between nature and society in the field of territorial planning.
12. Work autonomously

Content

The subject is divided into three main blocks: an introductory course that includes a brief historical review, a classification of environmental cartography and a review of the essential concepts of reference systems and cartographic projections. The second block deals with the main cartographic sources, differentiating the primary from the secondary sources, the representation models of the geographic information and, finally, the correction of images, the digitalization on the screen and the topological structuring. Finally, the third block shows the processes of compilation, design and symbolization of different cartography.

Introductory section: Understanding and use of cartography

1. Using cartography: cartographic representation
2. Geodesy and reference systems
3. Cartographic projections

Practical cartography section: Representation of digital geographical information

4. Cartographic sources
5. Digital representation of geographical information
6. Digital processing of images: correction, digitizing and structuring

Applied cartography section: Mapping

7. Compilation, design and symbolization of topographic and thematic cartography
8. Introduction to Geographical Information Systems

Methodology

The subject is divided into theoretical materials and practices. The theoretical material (primordial concepts and support for applied knowledge) will be facilitated by the teacher through the Virtual Campus (Moodle) and it will require an independent review by the student. The teacher will make a synthetic presentation of the

theoretical contents of each topic in class. It will also incorporate bibliography and digital references as a complement in the Virtual Campus and in the class.

The applied knowledge (theoretical and instrumental, such as the use of computer programs) will be developed through a set of guided practices, carried out at class time. The practices will be developed in two formats: in the mornings they will be delivered manually (therefore, it is necessary to take pencil, eraser, a short rule, calculator, etc.) while digitally in the afternoon. The digital material will be offered entirely in the practice classrooms with computers of the Faculty.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practices	30	1.2	5, 8, 1
Theory: basic concepts	22	0.88	12
Type: Supervised			
Guided resolution of practices and follow-up work course	30	1.2	3, 2, 11, 1, 10
Type: Autonomous			
Autonomous resolution of practices	23	0.92	7, 6, 12
Elaboration and presentation of results	20	0.8	4, 1, 12
Study of subject notes	15	0.6	8, 12

Assessment

Continuous evaluation

The learning continuous evaluation is based on the results of three notes, from the final exam, of the assessment of the practices delivered and of the course work.

The delivery of the practices is mandatory and to make the average with the rest of the notes, you must deliver at least 80% of the practices in paper format and 90% in digital format. If this requirement is not met, the final grade will be "not presented". The total value of all the practices is 25% of the final grade.

The course work will correspond to 25% of the final grade, being compulsory to be able to do the average with the rest of the notes, and therefore, if the final grade is not delivered it will be qualified as "not presented".

The final exam will be worth 50% of the final grade. In order to be able to present, it is necessary to have presented the minimum number of practices mentioned above and the course work, and to make the average with the rest of the notes, you must obtain a minimum score of five. The exam will consist of a series of theoretical questions (which will be worth 25% of the final exam mark) and a practical part done with a computer (which will be worth 75% of the remaining grade). In the case of not carry out to the final exam the final grade will be "not presented".

If you do not reach a minimum grade of five in the final exam, you can attend its recovery. To ask for a reevaluation the student must have been received a mark in activities that represent at least 2/3 of the global mark during the course. The minimum grade of final exam for appearing to the recovery is of 3,5. If this minimum is not obtained, the subject will be directly suspended.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Course work	25%	3	0.12	3, 2, 4, 7, 6, 12
Final exam	50%	2	0.08	3, 8
Practices	25%	5	0.2	5, 9, 11, 1, 10

Bibliography

Barber, Peter (2006). El gran libro de los mapas. Barcelona, Paidós.

Chuvieco, E. (2002) Teledetección ambiental: la observación de la Tierra desde el espacio. Barcelona, Ariel.

Dent B.D., Torguson, J. And Hodler, T. (2008). Cartography: thematic map design. 6th edition. Boston, WCB/McGraw-Hill.

Olaya, V. (2012). Proyecciones cartográficas. Sistemas de Información Geográfica. Tomo I. OsGeo.
Disponible a: https://www.icog.es/TyT/files/Libro_SIG.pdf

Ormeling, F. i Rystedt, B. (Ed.) (2014) El mundo de los mapas. International Cartographic Association.

Robinson, A.H.; Morrison, J.L.; Muehrcke, P.C.; Kimerling, A.J. and Guptill, S. (1995). Elements of cartography. New York, John Wiley and Sons.

Web links:

Institut Cartogràfic i Geològic de Catalunya (ICC) - <http://www.icgc.cat>

Instituto Geográfico Nacional - <http://www.ign.es/ign/main/index.do>

Atles climàtic digital de Catalunya - <http://www.opengis.uab.cat/wms/ACDC/index.htm>