Universitat Autònoma de Barcelona

2021/2022

Introduction to Cartography

Code: 100738
ECTS Credits: 6

Degree	Type	Year	Semester
2500241 Archaeology	OB	2	2

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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

Teachers

Francesc Coll Pujol

Prerequisites

This course has no specific requirements. Students should only have a basic knowledge of using general software such as Windows, Excel and Word.

Objectives and Contextualisation

Archaeology studies past societies through their material remnants: Therefore, cartography and the use of geospatial information are very useful tools either for the initial tasks of survey and inventory and later on for interpretation, analysis and presentation of results.

In that context, the course has three specific objectives:

1. To provide basic knowledge to understand and use cartographic representations in several fundamental aspects: measurement, positioning, scale representation, cartographic objects, conceptualisation of the information, information material support (e.g., cartographic data), and products for presentation (maps). Particularly, in the context of archaeology, by focusing on the different types of maps and scales used in archaeology.
2. To provide the technical skills needed to produce cartographic data, by digital means, for the usual tasks of archaeology (survey, situation, inventory, interpretation and landscape view). This includes data capture in the field (using GPS and total station) and in the lab (by digitizing from images and other sources with geographic references), data structuring, manipulation and storage in digital formats.
3. To provide the technical skills needed to design and produce presentation maps of the types used in archaeology. This covers map conception (e.g., selecting, compiling, simplifying and adapting information to the map purpose), data symbolization and graphic desing of the document.

Competences

- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethic relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.

Learning Outcomes

1. Apply spatial relations on different regional scales through the relations between nature and society and through a temporal dimension.
2. Autonomously searching, selecting and processing information both from structured sources (databases, bibliographies, specialized magazines) and from across the network.
3. Collect data in the field by using some of the basic measurement tools (GPS, total station).
4. Develop and use cartographic representations of real phenomena.
5. Identify appropriate technical solutions for practical needs to be resolved.
6. Identify the theoretical concepts that provide a foundation for technical operations.
7. Interpret maps and extract knowledge about spatial relations and their effect on material and cultural processes in societies.
8. Obtain and organise adequate data for each practical need to be solved.
9. Practice the different forms of acquisition and management of georeferenced spatial information as an instrument of inventory, analysis and interpretation of the territory and of the communication of observations and spatial knowledge through maps and earth observation images.
10. Produce and organise cartographic data to resolve cartographic needs in archaeology.
11. Produce conventional graphic documents: planimetric, topographic, cartographic, illustrative drawing.
12. Produce maps from digital cartographic data, by using technical knowledge compilation, symbolization and cartographic design.
13. Use software of geographical information system to produce and transform digital cartographic data and creating maps.

Content

Part I: Understandig and usage of cartographic representation (30%)

1. Aim of cartography.

2. Geodesy and geographic reference systems.

3. Cartographic projections and coordinate systems.

Part II: Digital cartographic data production (40 %)

4. Digital representation of cartographic information.

5. Methods of production, cartographic data sources.

6. Digital image processing.

7. Digitizing, structuring and transforming digital cartographic data.

Part III: Map making (30 %)

8. Cartographic compilation.

9. Cartographic symbolization.

10. Cartographic design.

Methodology

Theoretical and methodological subjects are introduced with concise lectures and are developed by the autonomous work done by the students, which includes studying specific course materials (class notes provided for all the subjectes) available at UAB Virtual Campus and general readings (bilbiography and web resources).

Technical abilities are acquired by a set of guided exercises done by the students in a computer lab during the teaching period or on their own.

For each subject students will do 1 or 2 guided exercises in the classroom (computer lab) at an approximate rate of one exercise per week. Additionally, students will do by themselves 4-5 exercises in the semester. Exercises done at the classroom must not be submitted and will not be evaluated. Exercises done autonomously had to be submitted and are evaluated.

Learning field data capture techniques (GPS and total station) involves two field trips in April on two friday mornings.

All the course resources (class notes, exercises, quizzes, documents and data) are available online at UAB Virtual Campus (a Moodle based e-learning platform).

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Guided exercises at the computer lab	25	1	1, 4, 12, 6, 5, 8, 3, 10
Lectures on basic concepts	15	0.6	1, 4, 9, 6, 7
Type: Supervised			
Data capture tasks in field trips	10	0.4	8, 3, 10
Supervised exercises at the computer lab	10	0.4	4, 11, 12, 10, 13
Type: Autonomous			
Reading class notes and solving theoretical quizzes	28	1.12	4, 6, 7

Assessment

Evaluation of this course is continuous and is based on the outcome of the evaluated practical exercises (4-5 in the semester). All the execises should be submitted in the time scheduled. Assignments not submited in time can be submited at the end of the semester (several days before the final exam).

All the exercises are mandatory and have to be done individually. The average of all assignment grades, jointly with the average grade of all theoretical quizzes, forms the continous grade. Exercises can not be retaken nor re-evaluated.

Theoretical parts of the course will be evaluated continously as well by means of a quiz at the end of each subject or group of subjects. If the average grade of all theoretical quizzes is 5 or higher, the theoretical part of the final exam does not have to be done.

The continous grade must be validated passing a final exam at the end of the semester (first week of June). This final exam will have a theoretical part (35% of the exam grade) and a practical part (65% of the exam grade).

To pass the course students have to:

- ***submit at least 80% of the evaluated exercises assigned*** to have the right to attend to the final exam.

- ***pass the final (or recovery) exam with a minimum grade of 5 over 10***.

Once the final (or recovery exam) is passed, the final grade of the course will be the highest grade, either the continous grade or the exam grade, provided that the difference between them is not greater than 2 points. In that case, the exam grade will be the final grade.

RECOVERY

Students that do not pass the final exam will have the right to do a recovery exam two weeks later, in the date scheduled by the school. Requirements for attending to the recovery exam are the same for attending to the final exam (80% of the evaluated exercises submitted).

NOT EVALUATED

If the student has not delivered anything, not attended to any laboratory session and not done any exam, the corresponding result will be "not evaluated". In any other case, "not delivered" counts as a 0 for the weighted average that will be maximum a 4.5. Therefore, if students participate in an evaluated activity, it implies taking into account the "not delivered" in other activities as zeros.

FIRST CLASS HONOURS

First class honours will be awarded to those students that obtain a result of 9.5 or over in each part, up to 5% of those registered following a descending order of the final result.

REPEAT STUDENTS

Students who are repeating the subject will not be treated differently.

COPIES AND PLAGIARISMS

When we talk about copies, we refer to the evidence that the project or the exam has been partially or totally created without the intellectual contribution of the author. In this definition, we also include the proven attempt to copy in the exams and delivered projects and the violation of the laws that assure intellectual authorship. Plagiarisms refer to the projects and texts from other authors that someone pretends to be his/her own creation. It is a crime against intellectual property. In order to avoid committing plagiarism, quote all the sources that you use when writing the report of a project. According to UAB's law, copies and plagiarisms or any other attempt to alter the results of one's own evaluation or someone else's -allowing to copy, for example, implies a result of the corresponding part (theory, problems or practical tasks) of a 0 and in this case, the student will fail the subject. This does not limit the right to take academic and legal actions against those who have participated. See UAB documentation about copies and plagiarisms
http://wuster.uab.es/web_argumenta_obert/unit_20/sot_2_01.html

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Autonomous exercises and theoretical quizzes	50	60	2.4	1, 2, 4, 11, 12, 9, 6, 5, 7, 8, 3, 10, 13

Final exam	50	2	0.08	1, 2, 4, 11, 12, 9, 6, 5, 7, 8, 3, 10, 13

Bibliography

General textbooks of cartography

Barber, P. (2006) *El gran libro de los mapas* (Spanish edition). Barcelona: Paidós.

Dent, B.; Torguson, J. and Hodler, T. (2008) *Cartography: Thematic Map Design*. 6th edition. Boston: WCB / McGrawHill.

Joly, F. (1988) *La cartografía* (Spanish edition). Vilassar de Mar (Barcelona): OikosTau.

Nunes, J. (2012). *Diccionari terminològic de sistemes d'informació geogràfica*. Barcelona: Enciclopèdia Catalana i Institut Cartogràfic i Geològic de Catalunya, 551 pp.

Consultable a http://www.termcat.cat/ca/Diccionaris_En_Linia/197

Rabella, J.M., Panareda, J.M., Ramazzini, G. (2011). *Diccionari terminològic de cartografia*. Barcelona: Enciclopèdia Catalana i Institut Cartogràfic i Geològic de Catalunya, 417 pp.

Consultable a http://www.termcat.cat/ca/Diccionaris_En_Linia/197

Robinson, A.H.; Morrison, J.L.; Muehrcke, P.C.; Kimerling, A.J. and Guptill, S.C. (1995) *Elements of Cartography*. 6th edition. New York: John Wiley and Sons.

Robinson, A.H.; Morrison, J.L.; Muehrcke, P.C. and Kimerling, A.J. (1987) *Elementos de cartografía* (Spanish edition of the 5th English edition). Barcelona: Ediciones Omega.

Textbooks of cartography for archaeology

Chevallier, R. (2000) *Lecture du temps dans l'espace: topographie archéologique et historique*. Paris: Picard.

Howard, P. (2006) *Archaeological surveying and mapping: recording and depicting the landscape*. New York: Routledge.

Textbooks of geographic information systems for archaeology

Conolly, J. and Lake, M. (2006). *Geographical Information Systems in Archaeology*. Cambridge: Cambridge University Press.

Conolly, J. and Lake, M. (2010) *Sistemas de información geográfica aplicados a la arqueología*. (Spanish edition). Barcelona: Edicions Bellaterra.

Wheatley, D. and Gillings, M. (2002) *Spatial technology and archaeology*. London: Taylor & Francis.

Software

ArcGIS, QGis and MiraMon.