

**COURSE DATA****Data Subject**

<b>Code</b>	33803
<b>Name</b>	Cartography II
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2020 - 2021

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1318 - Degree in Geography and the Environment	Faculty of Geography and History	2	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1318 - Degree in Geography and the Environment	624 - Cartography II	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
VALERA LOZANO, ANTONIO	195 - Geography

**SUMMARY**

The course "Cartografia II" focuses on the study (theoretical) and production (practice) of all kinds of thematic maps. This is the first course where students become familiar with geographic information systems. The aim of this course is that students learn to interpret and make the most common types of thematic maps using computer tools. To this end they must learn to: - Define the purpose of the map or of the chart to make - Select and process information properly - Select visual variables and the type of graphical representation more appropriate - Use correctly tools to get the appropriate result - Use your critical for detecting and handling errors in their own maps or other existing material



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

The course Cartografia I should be passed. Having some skills on using computer programs.

## COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

### 1318 - Degree in Geography and the Environment

- Comunicación oral y escrita en la lengua propia y conocimiento de una lengua extranjera.
- Conocimientos de informática relativos al ámbito de estudio.
- Capacidad de trabajo individual.
- Capacidad de trabajo en equipos de carácter interdisciplinar.
- Motivación por la calidad en el trabajo, responsabilidad, honestidad intelectual.
- Habilidades de investigación.
- Métodos de información geográfica.
- Técnicas de información geográfica como instrumento de conocimiento e interpretación del territorio y del medio ambiente.
- Relación y síntesis información territorial transversal.
- Manejo de la cartografía y los sistemas de información geográfica.
- Elaborar e interpretar información estadística. Manejo de programas estadísticos.

## LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

In this course, students will learn and understand the language of maps. They will learn both photointerpretation and interpretation of different types of thematic maps. These kind of maps will be essential in their academic and professional development. Moreover, in this course students will use digital sources of information and tools from which will help them into some other courses such as GIS I and GIS II.

## DESCRIPTION OF CONTENTS



## **1. History of Maps**

1.1. The Ancient World: Greece and Rome 1.2. (first) Middle Ages: Christian 1.3. Middle Ages: Muslim 1.4. Middle Ages: Christian 1.5. Chinese expeditions 1.6. European explorations during the Modern Age 1.7. Technical advances during the Renaissance: Mercator, Ortelius 1.8. Seventeenth and Eighteenth Centuries. Triangulation 1.9. Nineteenth Century

## **2. Concept of Thematic Maps**

A thematic map is the one that is designed to show particular features or concepts , using as a base a map support. 2.1. Relevance to geography and to other sciences It is therefore an essential tool for geography , but also for other sciences that can use spatial analysis to study , such as engineering and economy. 2.2. Applications Thematic mapping applications are varied in Geography or in Engineering . They are used especially for land management (planning, natural resources and environment) , and thematic maps can be as diverse as realities are representable (roads , settlements , population density , land use , network river elevations , etc.). 2.3. Geographic information The data must be treated in order to remove unnecessary data and, if necessary , should be converted into indexes, densities , percentages , etc. in order to carry out the map. 2.4. Information Data can be absolute or relative . Absolute data are data such as consumption of goods , population, altitude , rainfall... Relative data express some kind of relationship between two or more datasets: population density, per capita income , unemployment rate...

## **3. Tools for the development of thematic cartography**

3.1. CAD (Computer Aided Design). These systems were built to design and draw new objects. They represent objects in 2D and 3D, widely used for people working in design and representation such as engineers, architects, draftsmen, etc.. 3.2. GIS (Geographic Information System). These systems relates datasets through its geographic location in order to meet spatial requirements. 3.3. Sources and map resources on the Internet. The WMS provide different types of geographic information. From this information WMS users can draw new maps. WMS operations can also be called through GIS applications, making requests in the form of URLs. Users can access this information remotely, with the advantage of being able to use the information and compare it with the information they already have.

## **4. Graphic Semiology**

4.1. Cartographic language. It tries to improve the expressiveness of the graphical features of elements in a map in order to optimize the visualization process that transfers information from the map to the consultant. 4.2. Visual variables: strengths and limitations. The map is a graphical tool that plays through three primary elements (point, line, plane) whose visual variables may be modified by the cartographer to make distinctions. These variables are size, value, texture, color, orientation and shape.



## 5. Types of maps

The maps can be made out of points, lines or surfaces. From these three primary elements different types of thematic maps can be defined such as proportional symbols maps, dot maps, isoline maps, coroplethes, flow maps, etc.

## 6. Specialized thematic maps

Cartography and urban planning. Land use maps help to plan the land.

## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Computer classroom practice	15,00	100
Other activities	15,00	100
Development of individual work	30,00	0
Study and independent work	30,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	15,00	0
<b>TOTAL</b>	<b>150,00</b>	

## TEACHING METHODOLOGY

Theoric lectures will be held during the first days of the course. Practical lectures will be held during the middle and end of the course and will include preparation of thematic maps using ArcGIS 9.2 software. Exercises, whose completion can be done outside of class, will be made whenever possible in coordination with other courses. These exercises, along with their interpretation (comment) must be included in a practical notebook that will be an essential part of the evaluation.

## EVALUATION

Theoretical and practical exam: 50%

Practical work and complementary activities: 50%



## REFERENCES

### Basic

- BORDEN, D. (1993): Cartography : thematic map design, Dubuque (IA) : WCB Wm. C. Brown
- CARRERA, C. ET AL. (1988): Trabajos prácticos en geografía humana, Madrid, Síntesis
- MORENO JIMENEZ, A. (coord.) (2005): Sistemas y análisis de la información geográfica. Manual de autotrendizaje con ArcGis, Ra@Ma, Madrid, partes II y III.
- SANTOS PRECIADO, J.M. (2004): Sistemas de Información Geográfica Madrid. UNED.
- CUFF, D. J. (1984): Thematic maps : their design and production, New York : Methuen

### Additional

- KEATES, J.S. (1989): Cartographic design and production, Harlow, Longman
- ROBINSON, A. (1987): Elementos de Cartografía. Omega, Barcelona
- MONMONIER, Mark S. (1991): How to lie with maps. Chicago, The University of Chicago Press

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

### SEMI-PRESENTIAL TEACHING

#### 1. Contents

The contents initially included in the teaching guide are maintained

#### 2. Workload and time schedule

The activities and their hours of dedication in ECTS credits marked in the original course guide will be kept. If the classrooms capacity according to the sanitary norms allows it, the theoretical and practical class attendance will be 100% (if the capacity couldn't be guaranteed, the class attendance would be reduced). Supplementary activities (weekly hour O: total 15 h.) may require attendance (field trips, seminars) or could be online, and will be specified at the beginning of the term in the Annex to the Course Guide, like the rest of the teaching planning.



If the sanitary situation changes and no access to the University facilities is possible, all teaching activities will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.

### **3. Teaching Methodology**

Theory and practice classes that may be complemented with different types of materials and activities in the Virtual classroom.

Tutorials will be done online (through the UV corporate mail) or face-to-face by prior appointment with the teacher.

If the sanitary situation changes and no access to the University facilities is possible, teaching and tutorials will be carried out completely online. In this case, the adaptations will be communicated to the students through the Virtual classroom.

### **4. Evaluation**

The evaluation criteria established in the Course Guide are kept.

If the University facilities were closed on the dates set in the official calendar for the final exam, the face-to-face exam would be replaced by an online test.

### **5. Bibliographic references**

The recommended bibliography in the Course Guide is kept. If the sanitary situation changes and the access to the recommended bibliography is not possible, it will be replaced by materials accessible online.