

## 66714 - Applied to the Resolution of Environmental Problems Cartography

### Información del Plan Docente

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| Academic Year   | 2016/17   |
| Academic center | 103 - Facultad de Filosofía y Letras              |
| Degree          | 328 - Master's in Land and Environmental Planning |
| ECTS            | 6.0   |
| Course          | 1   |
| Period          | Annual  |
| Subject Type    |   |
| Module          | ---   |

### 1. Basic info

#### 1.1. Recommendations to take this course

#### 1.2. Activities and key dates for the course

### 2. Initiation

#### 2.1. Learning outcomes that define the subject

#### 2.2. Introduction

### 3. Context and competences

#### 3.1. Goals

#### 3.2. Context and meaning of the subject in the degree

#### 3.3. Competences

#### 3.4. Importance of learning outcomes

### 4. Evaluation

### 5. Activities and resources

#### 5.1. General methodological presentation

The learning and teaching methodology developed in the course is aimed to promote the attainment of its objectives. A wide range of teaching and learning activities is implemented, such as interactive lessons, practical exercises, individual or group activities, directed activities, field work and private study.

A high level of student participation will be required from all students throughout the course.

Extensive material will be available *via* the Moodle site of the course. This offers a variety of resources including a

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repository of the lecture notes used in class, a course syllabus as well as other forms of course-specific materials, including a discussion forum.

### 5.2.Learning activities

Lecture sessions: 9 hours

Interactive, individual or group activities: 8 hours

Field work: 16 hours

### 5.3.Program

The lecture course will address the following main issues:

1. Cartography: principles and elements.
- 2.Principles, instruments and methodologies for acquiring spatial information:
  - 2.1. Direct methods: GNSS, submetric GPS.
  - 2.2. Indirect methods: georeferencing images,.
  - 2.3. Indirect methods: Web Servers.
3. Raster modeling and analysis of environmental information :
  - 3.1. Digital Elevation Model
  - 3.2. Main modelling and analysis tools.
  - 3.3. Map algebra.
4. Cartographic editing toolset.
5. Web Map Server: Spatial data infrastructures (SDI and metadata).
6. Format for preparation of project report.

### 5.4.Planning and scheduling

The course is divided into 6 thematic blocks. The first block includes the following topics: 1 and 2; it runs during the first

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week. The second thematic block includes the topics 3 and runs during the 4 weeks following. The final blocks 4,5,6 covers the topics cartographic, project and develops during the final 3 weeks of the course.

For further details concerning the timetable, classroom and other information of the course please refer to the "Facultad de Filosofía y Letras" web site (<https://fyl.unizar.es/horario-de-clases#overlay-context=horario-de-clases>)

### 5.5. Bibliography and recommended resources

AYALA, F. J. (Dir.), (1998): *La Geología Ambiental en el contexto de las disciplinas y problemas ambientales*, en AYALA, F. J. & JORDÁ, J. F. (Eds. y Coord.): *Geología Ambiental*. 9-15. ITGE. Madrid.

ANSON, R.W. y ORMELING, F.J. (1993): *Basic cartography for students and technicians*, International Cartographic Association, London, 344 pp.

BÉGUIN, M. y PUMAIN, D. (1994): *La représentation des données géographiques: statistique et cartographie*, Armand Colin, Paris, 192 pp.

BOSQUE SENDRA, J. (1992): *Sistemas de Información Geográfica*, Rialp, Madrid, 451 pp.

BOSQUE SENDRA, J., DÍAZ-MUÑO, A., GÓMEZ DELGADO, M., RODRÍGUEZ DURÁN, A.E. y RODRÍGUEZ ESPINOSA, V.M. (1999): "Sistemas de información Geográfica y Cartografía de Riesgos tecnológicos. El caso de las instalaciones para la gestión de residuos de Madrid". In: *VII Jornadas de Geografía Industrial, Industria y Medio Ambiente. Madrid*.

CARVER, S.J. (1991): Integrating multi-criteria evaluation with geographical information system, *Journal of Geographic Information System*, vol 5 (3), pp.321-339.

CHUVIECO, E. (2008): *Teledetección ambiental. La observación de la Tierra desde el Espacio*, Ariel Ciencia, Barcelona, 595 pp.

DENT, B.B. (1985): *Cartography: thematic map design*, WCB Publishers, Dubuque, 427 pp.

DOMÍNGUEZ, F. (1991): *Topografía general y aplicada*, Ed. Dossat, Madrid, 823 pp.

FERNÁNDEZ GARCÍA, F. (2000): *Introducción a la fotointerpretación*, Ariel Geografía, Barcelona, 253 pp.

GILPÉREZ, L. (1986): *Lectura de planos*, Penthalon Ediciones, Madrid, 188 pp.

GOODCHILD, M. (2010) *Whose hand on the tiller? Revisiting "Spatial Statistical Analysis and GIS"*. In L. Anselin and S.J. Rey, editors, *Perspectives on Spatial Data Analysis*, pp. 49-60. New York: Springer.

JIMÉNEZ, J. y MONTEAGUDO, E. (Eds.) (2001): *La documentación cartográfica. Tratamiento, gestión y uso*, Publicaciones de la Universidad de Huelva, Huelva.

JOLY, F. (1988): *La cartografía*, Oikos-Tau, Barcelona, 133 pp.

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*MANCEBO, S., ORTEGA, E., VALENTÍN, A.C., MARTÍN, B. y MARTÍN, L. (2008): Libro SIG: aprendiendo a manejar los SIG en la gestión ambiental, Madrid, 108 pp.*

*MANCEBO, S., ORTEGA, E., MARTÍN, L. y VALENTÍN, A.C. (2009): Libro SIG: aprendiendo a manejar los SIG en la gestión ambiental: ejercicios, Madrid, 149 pp.*

*MARTÍNEZ-ALEGRÍA, R. (2003): Sistemas de Información Geográfica. Aplicaciones prácticas con IDRISI32 al análisis de riesgos naturales y problemáticas medioambientales, Madrid, 248 pp.*

*ORDÓÑEZ, C. y MARTÍNEZ-ALEGRÍA, R. (2002): Sistemas de Información Geográfica, Madrid, 227 pp.*