

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

<b>Code</b>	41052
<b>Name</b>	Natural systems and society
<b>Cycle</b>	Master's degree
<b>ECTS Credits</b>	14.0
<b>Academic year</b>	2023 - 2024

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
2001 - M.D. in Environmental and Territorial Management Techniques	Faculty of Geography and History	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
2001 - M.D. in Environmental and Territorial Management Techniques	1 - Natural systems and society	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
CALVO CASES, ADOLFO	195 - Geography

**SUMMARY**

The module is organised into four parts covering the most important aspects of the subject area:

- Part I: Natural systems and anthropogenic systems, erosion processes in the Mediterranean.
- Part II: New territorial guidelines for urbanisation and Urban planning.
- Part III: Territorial planning, environmental problems and governance.
- Part IV: Territorial planning in practice.

The **first part** is presented as an introduction and update of information as regards the processes taking place in the Mediterranean physical environment and its most important environmental problems, with particular attention to climate change.



The **second part** seeks, on the one hand, to analyze the territorial pattern prevailing today in the development of large urban spaces, the characteristics of the resulting new real city -the low-density city or dispersed city-, the factors that determine these processes and the important consequences that they have on the territory, in particular those that affect the environment. On the other hand, it is proposed to explain the content, regulation and practice of urban planning.

**The third part** explains the content, regulation and practice of territorial planning, by means of which it is a matter of giving coherence to the territorial planning and development processes that allow facing new territorial problems, challenges and guidelines. The spatial delimitation that territorial and urban planning supposes and the obligations that it establishes with its regulations establish the framework within which the management of a territory must inescapably unfold. Without their knowledge, the proper use of any management technique is not possible.

**The fourth part** carries out, from an applied perspective, a review of both the implementation of territorial planning instruments in the Valencian Community, and the contents that give rise to the concepts and processes of strategic planning applied to territories at scale local, municipal or supra-municipal. Finally, the available tools to incorporate adaptation to climate change in land use planning and in all public policies are analyzed.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

None

## OUTCOMES

### 2001 - M.D. in Environmental and Territorial Management Techniques

- Capacidad de realizar la planificación territorial: análisis, diagnóstico y propuestas.
- Análisis del medio físico de una manera integrada, interrelacionando sus componentes a partir del trabajo de campo y manejo de elementos cartográficos y toma de datos.
- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.



- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.

## LEARNING OUTCOMES

1. Recognition of geomorphological processes and forms (fluvial, coastal and hillside) at different spatial and time scales.
2. Knowledge of the relationship between environmental issues and the forms and processes of social change and collective perceptions.
3. Identification and interpretation of territorial processes and their impact on the environment.
4. Knowledge of the powers of the different public administrations in the area of environmental protection and territorial legislation at the regional, national and European level.
5. Studies, interpretation and analysis of territorial planning projects in rural and urban areas.
6. Recognition of the problems associated with urbanisation and its implications on sustainability.

## DESCRIPTION OF CONTENTS

### 1. The Mediterranean region: climate change, human action and characterisation

Sensitivity of natural systems to anthropogenic impact.

Anthropogenic changes in natural systems.

Spatial characterisation of the Mediterranean environment: an environment in transition.

Recent environmental history: an intensification of human action?

Evidence and realities of climate change at global, regional and local level (Valencian Community).

Environmental repercussions.

### 2. Erosion Processes

Forms and processes of erosion. Interactions.

Accelerated erosion processes linked to runoff.

Gravitational accelerated erosion processes.

Soil protective factors.

Influence of land use and changes in land use and management on erosion processes.

Impact of forest fires on soils and vegetation.

Measures for soil conservation.



### **3. The river system**

- Flow and sediment: genesis of runoff, flow, regime. Sediment sources, transfer and rates
- Processes on the river bed: flow characteristics, erosion and transport
- Forms of river beds: controls of the shape of the channel, settings, development of the floodplain, alluvial channels and channels in bedrock
- Environmental change. Alluvial files
- Human action in river beds, environmental degradation

### **4. The coastal system**

- General. Dynamic agents on the coast. Wind, waves, tides and currents.
- Beaches and coastal arrows. Dynamics, erosion, regeneration measures.
- Dunes. Dynamics and types. Impacts. Restoration methods.
- Barrier islands and micromareal coastal lagoons. Types, evolution models, management patterns.
- River mouths: deltas and estuaries. Water mixing models. Stability of deltas.
- Marshes and estuaries. Dynamics and stability factors. Protection and regeneration of marshes.
- Rocky coasts: typology and dynamics. Cliff stability. Anthropisation of cliffs.
- Sea level variations. Global causes and trends. Adaptation methods.

### **5. New territorial guidelines for urbanization**

- The stages of the urbanisation process in Europe and Spain. Urban sprawl (diffuse urbanisation) and the low-density city. Characteristics of the low-density city
- Current trends and perspectives
- New tools for the study of the urbanisation process: Is it possible to predict urban growth?

### **6. Urban planning**

- Urbanism as a public service. Urban planning and management. The distribution of constitutional powers
- General planning. The physical model: main determinations, concept and meaning. Management model
- Planning of development. Types and objectives. Partial plans and internal reform plans
- The delimitation of urban development. The debate on developable land. The valuation of undeveloped land and its regulation.

### **7. Territorial planning, environment and governance**

- New territorial challenges and trends that de-construct the relationship between spatial planning with urbanism and sectoral policies: climate change, energy transition, urban agendas and socio-ecological approaches.
- Coherence, coordination and evaluation: possibilities and barriers for a new territorial governance.
- From planning instruments to management; the challenge of implementation and evaluation.



- Case studies and examples of good practice and conflicts.

### 8. Territorial planning in practice

- Territorial planning instruments in Valencia.
- Concepts and processes in the strategic local, municipal or supra-municipal planning.
- Engagement of the social actors in the strategic plan.
- Working examples.

### 9. Territorial policies for adaptation to climate change

- Climate change on the Spanish Mediterranean coast: scientific evidence.
- Territorial impact of climate change and atmospheric extremes.
- The need to adapt planning (economic, hydrological, emergency, spatial planning) to the effects of climate change.
- Incorporation of climate change and climate risks in spatial planning: tools and experiences.
- Public processes and policies. Institutional context and governance models in the 2030 horizon.

## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	60,00	100
Other activities	12,00	100
Seminars	5,00	100
Classroom practices	5,00	100
Tutorials	4,00	100
Development of individual work	100,00	0
Study and independent work	100,00	0
Preparation of evaluation activities	64,00	0
<b>TOTAL</b>	<b>350,00</b>	

## TEACHING METHODOLOGY

### 1. Classroom lectures

Explanation of the basic content of the course. Usual teaching resources such as presentations, images of different environments, graphics and diagrams are used. All material used in class is available to students in the virtual classroom. In addition, students will be advised to read specific literature to complement the information provided in class.





## **2. Fieldwork**

Two field trips will be organised. This activity is mainly aimed at putting the student into contact with the reality of the Mediterranean physical environment.

## **3. Readings of texts**

Texts, documents and plans will have to be read individually, before or after attending the lessons, as appropriate, for a better understanding of the contents, to facilitate participation and debate and to prepare possible written essays.

## **4. Individual written assignments**

These will be based on the reading of texts about some topics included in the syllabus. The annex to the annual programme will specify the content, format and conditions.

## **5. Group assignment**

This is to be prepared in groups of 3 or 4 people and the aim is to apply all or part of the concepts studied during the course to a particular territorial space.

The annex to the annual programme will specify the content, format and conditions.

## **6. Tutorials**

Two types of tutorials will be offered: individual to help clarify concepts and theory, and in groups to direct the preparation of the practical assignment.

# **EVALUATION**

The final mark will be based on the following items:

- Regular attendance at class (minimum of 80% attendance).
- Attendance at and participation in field trips (compulsory).
- Participation in class and knowledge of the readings required.
- Individual written assignment.
- Group assignment.
- Oral presentation of assignments.



## REFERENCES

### Basic

- Andrés, J. R.. y Gracia, F. J. (ed.) (2000). Geomorfología litoral: procesos activos. S.E.G. IGME. Univ. Cádiz.
- Davidson-Arnott, R. (2012). An introduction to coastal processes and geomorphology. Cambridge University Press.
- Esteban, J. (2003). La ordenación urbanística: concepto, herramientas y prácticas. Electa.
- Farinós, J. (coord.) (2021). Evaluación de procesos: una mirada crítica y propositiva de la política e instrumentos de ordenación del territorio en España. Thomson Reuters Aranzadi.
- Farinós, J., y Garrido, J. (eds.) (2021). Guía para una gobernanza efectiva del territorio un decálogo para la buena práctica de la ordenación del territorio en España. Valencia. Universitat de València. <https://roderic.uv.es/bitstream/handle/10550/80482/Guia-gobernanza-efectiva-territorio.pdf?sequence=1&isAllowed=y>
- Farinós, J., y Olcina, J. (eds. y coords.) (2022). Ordenación del Territorio y Medio Ambiente. Valencia. Tirant lo Blanch.
- Global Commission on Adaptation (2019). Adapt Now: a global call for leadership on climate resilience, World Resources Institute, September.
- Holden, J. (2008). An Introduction to Physical Geography and the Environment. Pearson.
- Indovina, F. (coord..) (2007). La ciudad de baja densidad. Diputació de Barcelona, Col·lecció Estudis.
- IPCC (2023). Summary for Policymakers. In: Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 36 pages. Disponible en: [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_LongerReport.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf)
- Kirkby, M. J., & Morgan, R. P. C. (ed.) (1980). Soil erosion. Wiley.
- Romero, J., Olcina, J. (2021). Cambio climático en el mediterráneo. Procesos, riesgos y políticas. Valencia, Tirant Humanidades.

### Additional

- Benetó, P., & Khodayar, S. (2023). On the need for improved knowledge on the regional-to-local precipitation variability in eastern Spain under climate change. Atmospheric Research, (290), 106795.
- Charlton, R. (2007). Fundamentals of Fluvial Geomorphology. Routledge, introductions to environment series. Taylor & Francis Group.
- Ernst, W. G. (ed.) (2000). Earth Systems: processes and issues. Cambridge University Press.



- Farinós, J. (2008). Inteligencia para la gobernanza territorial. En A. De Souza, y M. R. Simancas (coord.), Sociedad civil organizada y desarrollo sostenible en Sociedad civil organizada y desarrollo sostenible (pp. 19-33). Gobierno de Canarias.
- Farinós, J. (2010). Bases, métodos e instrumentos para el desarrollo y la cohesión territoriales. Diagnóstico y propuestas para el debate y la acción. En J. Farinós, J. Romero, y J. Salom (eds.), Cohesión e Inteligencia Territorial (pp. 11-18). PUV.
- Farinós, J., y Romero, J. (2007). El gobierno del desarrollo territorial sostenible. A modo de presentación. En J. Farinós, y J. Romero (eds.), Territorialidad y buen gobierno para el desarrollo sostenible. Nuevos principios y nuevas políticas en el espacio europeo (pp. 11-18). PUV.
- Farinós, J., y Serrano, A. (coords.) (2022). El papel del territorio y de la políticas territoriales en la estrategia de recuperación, transformación y resiliencia. Universitat de Valencia. <https://roderic.uv.es/handle/10550/84853>
- Fernández, G. R. (2008). Urbanismo y financiación local. Papeles de Economía Española, (115), 212-224.
- García, J. (1998). Excepcionalidad del urbanismo español: su anatomía comparada con el contexto europeo. Obras Públicas: Revista del Colegio de Ingeniero de Caminos, Canales y Puertos, (43), 92-103.
- Grove, A. T., & Rackham, R. (2001). The nature of Mediterranean Europe. An Ecological History. Yale University Press.
- Hildenbrand, A. (2007). Tres propuestas para una relación efectiva entre las escalas regional y local en materia de Ordenación del Territorio. En J. Farinós, y J. Romero (eds.), Territorialidad y buen gobierno para el desarrollo sostenible. Nuevos principios y nuevas políticas en el espacio europeo (pp. 147-189). PUV.
- Miró, J. J., Estrela, M. J., Caselles, V., & Gómez, I. (2018). Spatial and temporal rainfall changes in the Júcar and Segura basins (1955-2016): Fine-scale trends. International Journal of Climatology, 1-24. DOI: 10.1002/joc5689
- Miró, J. J., Estrela, M. J., Corell, D., Gómez, I., & Luna, M. Y. (2023). Precipitation and drought trends (1952-2021) in a key hydrological recharge area of the eastern Iberian Peninsula. Atmospheric Research, (286), 106695.