

# Course guide

## 250238 - URBSISTTER - Urbanism and Regional Systems

Last modified: 01/10/2023

**Unit in charge:** Barcelona School of Civil Engineering  
**Teaching unit:** 751 - DECA - Department of Civil and Environmental Engineering.

**Degree:** BACHELOR'S DEGREE IN PUBLIC WORKS ENGINEERING (Syllabus 2010). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 4.5    **Languages:** Catalan

### LECTURER

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**Coordinating lecturer:** MIRIAM VILLARES JUNYENT

**Others:** PERE MACIAS ARAU, DANIEL RODRIGUEZ ARANDA, MIRIAM VILLARES JUNYENT

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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#### Specific:

3093. Knowledge of the regulatory framework of urban management  
3094. Knowledge of the influence of infrastructures on town and country planning enabling participation in the urbanisation of urban public space, and on plans for urban services and utilities such as water distribution, sewage disposal, waste management, transport systems, traffic, lighting, etc

#### Generical:

3105. Students will learn to identify, formulate and solve a range of engineering problems. They will be expected to show initiative in interpreting and solving specific civil engineering problems and to demonstrate creativity and decision-making skills. Finally, students will develop creative and systematic strategies for analysing and solving problems.  
3108. Students will learn to identify and model complex systems and to identify the most suitable methods and tools for defining and solving the associated equations. They will acquire the knowledge and skills to perform qualitative analyses and approximations, estimate the uncertainty of results, formulate hypotheses and define experimental methods through which to validate them, establish compromises, identify principal components and prioritise their work. More generally, students will develop their capacity for critical thought.  
3111. Students will learn to plan, design, manage and maintain systems suitable for use in civil engineering. They will develop a systematic approach to the complete life-cycle of a civil engineering infrastructure, system or service, which includes drafting and finalising project plans, identifying the basic materials and technologies required, making decisions, managing the different project activities, performing measurements, calculations and assessments, ensuring compliance with specifications, regulations and compulsory standards, evaluating the social and environmental impact of the processes and techniques used, and conducting economic analyses of human and material resources.  
3114. Students will learn to identify market requirements and opportunities and to compile information from which to determine the ideal specifications of a new product, process or service. They will acquire the skills to prepare a basic business plan, define a new product, process or service, and plan and implement the different phases in the design process.

#### Transversal:

585. ENTREPRENEURSHIP AND INNOVATION - Level 1. Showing enterprise, acquiring basic knowledge about organizations and becoming familiar with the tools and techniques for generating ideas and managing organizations that make it possible to solve known problems and create opportunities.  
586. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.  
589. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 2. Applying sustainability criteria and professional codes of conduct in the design and assessment of technological solutions.  
594. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.  
584. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

## TEACHING METHODOLOGY

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The course consists of 3 hours per week of classes in the classroom. Engaged in lectures 2 hours, in which the teacher explains the concepts and basic materials of the subject, presents examples and exercises. Remaining time is devoted to exercises, presentation of work, sharing and evaluation, in short activities with a greater interaction with students. Exercises are conducted to consolidate the general and specific learning objectives .. Support materials used in teaching programming format detailed by the virtual campus ATENEA: programming, content, learning and assessment activities conducted and bibliography.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

## LEARNING OBJECTIVES OF THE SUBJECT

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Students will acquire an understanding of how infrastructure influences land management. They will also learn to participate in the development of urban public space.

Upon completion of the course, students will have acquired the ability to: 1. Analyse an urban structure and identify the reasons for its development. 2. Analyse the development of regional infrastructure. 3. Analyse the development of networks of urban services.

Basic concepts of urban development and regional organisation; Urban morphology; Elements of the analysis of urban space; Infrastructure networks and city building; Networks of services, organisational logic, public space; Urban planning; Land management; Networks of infrastructure, highways and railways; Regional models; Urban structure and the effects of infrastructure; Service networks

## STUDY LOAD

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Type	Hours	Percentage
Guided activities	4,5	4.00
Self study	63,0	56.00
Hours large group	18,0	16.00
Hours medium group	18,0	16.00
Hours small group	9,0	8.00

**Total learning time:** 112.5 h



## CONTENTS

### The territorial systems in the construction of the territory

#### Description:

Instruments reading territory. The territorial systems in the construction of the territory. Rural society. Urban Society  
Transport infrastructure (road and rail networks). Technical services (telecommunications network and electricity supply network)  
Water planning, water balances of Catalunya. Urban water supply in the Metropolitan Area of Barcelona. The reuse of water as a resource. Sanitation plan of Catalunya. Flood protection works.  
The hydrographic network. Natural protected areas. The coast.  
Human settlements. The evolution of a nodal territory to another type of network.  
Reading indicators networks in graph theory.

Draw a diagram of a transportation or infraestructura network

#### Specific objectives:

Learning to understand the territory from the reading of topographic maps.

Making the importance of territorial systems understandable to the students, especially the technical services and transport infrastructure in the construction and the development of cities.

Knowing the characteristics of road, railways, telecommunications, power supply networks in relation to the characteristics of the territory where they are deployed.

Highlighting the relationships between transport networks and the growth of cities.

Presenting the two main groups of measures to improve water supply: to increase resources (desalination, water transfers, regulation) and reducing demand (savings, reuse)

Noting that flood protection cannot be completely achieved

Emphasize the importance of open areas (hydrographic network, natural areas, coasts) as a network of biological corridors and suppliers.

Learning the theories of representation and interpretation of the networks

Highlighting the limitations of the student in the knowledge of a network

#### Full-or-part-time: 36h

Theory classes: 10h

Practical classes: 2h

Laboratory classes: 3h

Self study : 21h



## Urban

### Description:

Origins and evolution of urban planning instruments. The introduction of urban services into the city. Types of plans today.

Territorial plans. The Municipal Urban Plans (POUM). Land use qualification: permitted uses and planning types expected. New perspectives on the usefulness of the POUMs. Development plans (Partial plans and Plans of Urban Improvement)  
Systems of urban development  
Specific Project for land subdivision

To make a work in groups of 3 or 4 members on the planning contents of a municipality with more than 2000 inhabitants. To propose a script to develop a report on current and planned infrastructure and define the characteristics of urban growth under the plan. To report the status of Territorial Planning: PTC, PTP, PITC, PEIN .... To provide the work with the basic contextual elements: geographical, demographic, socioeconomic and politic conditions and conclusions.

### Specific objectives:

Highlighting the urban revolution that occurs from the XIX century and that represents an increase in world population and its concentration in cities.

Learning different planning instruments for regulating urban growth.

Emphasizing the importance of planning in the organisation of cities' growth and land occupation. Explaining methodological and content differences between urban and regional Planning.

Explaining to students the importance of urban management as a set of actions to implement the theoretical planning.

Understanding the fitting between spatial plans and general planning based on the study of a municipality. Learning to report. Knowing how the urban section of a municipal administration works. Knowing current status of territorial planning in Catalonia  
Learning to work in teams, be cooperative in developing the scheme and the work.

Acquiring effective communication skills: in contact with the administration of a municipality to obtain the necessary information and documentation of a City Hall

**Full-or-part-time:** 31h 12m

Theory classes: 9h

Practical classes: 2h

Laboratory classes: 2h

Self study : 18h 12m



## Mobility and environmental aspects

### Description:

Concept of sustainable mobility.  
Network of pedestrian routes.  
Network of public transport routes.  
Network of bicycle lanes.

The infrastructure design considering its relationships with nature.  
Reuse of materials  
Urbanization for the sustainable mobility

The Environmental Impact Assessment of infrastructure projects  
The Strategic Environmental Assessment

Information systems in planning. Territorial and environmental management.  
Environmental observatories.  
Local Agenda 21

Conducting a workshop on a urban plan on a scale 1 / 1000 - 1 / 5000 and design of sustainable mobility networks,  
To make a synthesis of the key parts of the EIA of a project: evaluation, characterization and definition of impacts and proposed corrective measures

### Specific objectives:

Conducting a workshop on a urban plan on a scale 1 / 1000 - 1 / 5000 and design of sustainable mobility networks, using the expertise developed in the theoretical sessions.

Explaining the importance of environmental aspects in the design, construction and exploitation of infrastructures  
Learning the contents and methods used in environmental assessments of plans and projects

Disseminating tools and institutions for environmental management of the territory

Apply technical knowledge developed in the theory class.  
Performing a documentation work based on EIA of an infrastructure project.

### Full-or-part-time: 40h 48m

Theory classes: 10h  
Practical classes: 4h  
Laboratory classes: 3h  
Self study : 23h 48m

## GRADING SYSTEM

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To assess there will be 2 tests of knowledge: exams to verify the follow-up of the subject (40%) The weight of the mark of each exam will depend on the number of subjects that will fall to each partial exam.

The rest of the grade depends on the presentation and quality of the practical exercises delivered to the Athenaeum (40%).

The remaining 20% corresponds to the course work, in groups which is compulsory.

Attendances and deliveries of the exercises proposed in class help to re-scale the

Si l'estudiant que es presenta a la reavaluació no supera l'assignatura, es conserva la nota més alta entre el resultat de l'avaluació ordinària i el de la reavaluació.

To take the extraordinary exam, you must have the coursework and the internships delivered.

Criteria of qualification and of admission to the re-evaluation: the students suspended in the ordinary evaluation that have presented regularly in the proofs of evaluation of the assignatura suspended

they will have the option of taking a re-assessment test in the period set in the academic calendar.

Students who have already passed the subject, nor students qualified as not presented, will not be able to take the re-assessment test for a subject. The rating

maximum in the case of taking the re-assessment exam will be five (5.0). The non-attendance of a student summoned to the re-evaluation test, held in the fixed period no

may give rise to another test at a later date. Extraordinary assessments will be conducted for those students who due to accredited force majeure

have not been able to take any of the continuous assessment tests.

## EXAMINATION RULES.

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If not done some of the activities of continuous assessment in the programmed period will be considered as a zero score.

The course work is required

## BIBLIOGRAPHY

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