UAB
Universitat Autònoma de Barcelona

Dynamics of Water, Energy and Natural Resources

Code: 104253
ECTS Credits: 6

2024/2025

Degree	Type	Year
2503710 Geography, Environmental Management and Spatial Planning	OB	3

Contact

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

Students must have a sufficient level of English to understand scientific texts in this language.

Objectives and Contextualisation

This is a compulsory subject of 6 ECTS corresponding to the third year of the Degree in Geography, Environment and Territorial Planning; located in the matter "Planning and management of natural resources". The subject offers general knowledge about this matter, with the possibility of deepening it through the optional subjects that the study plan contemplates in it.

The subject focuses, first of all, on tracing a conceptual and theoretical approach to the question of the use and management of natural resources and the debate on the limits of growth. Next, two areas of particular importance in relation to resources are addressed in more detail: the planning and management of the water cycle and the planning and management of energy systems.

With this subject, students will gain general knowledge about the management and social use of natural resources and common goods. Thus, the dynamics of water, energy and natural resources are addressed both from the perspective of their uses (with special attention to reuse), and from the perspective of the different forms of management (offer- demand; public-private; centralized-decentralized). The subject, on the other hand, also aims for students to know different instruments and mechanisms for the management and planning of both water resources and energy resources.

In the field of water cycle management, the aim is for students to learn about its dynamics both from a physical and socio-economic point of view, with special attention to its environmental dimension. Also, the students will know and apply through practical work methods, techniques and instruments for the management of the water cycle.

In the field of energy, basic energy concepts are offered both in terms of energy sources (renewable and non-renewable) and in terms of planning and management of energy systems, both in terms of engineering environmental (generation, transport, distribution, commercialization and consumption of energy) as well as from the territorial, economic and institutional perspective.

Learning Outcomes

1. CM24 (Competence) Prepare a report on the planning and management of energy and/or water systems from a regional, economic, and institutional perspective.
2. KM39 (Knowledge) Identify the relationships between socio-economic development, environmental sustainability and the availability of and access to natural resources.
3. KM55 (Knowledge) List the main models of natural resource management.
4. SM30 (Skill) Incorporate the environmental, political and economic dimensions in the conceptual reflection on natural resources.
5. SM32 (Skill) Analyse the limits of growth based on the relationships between socio-economic development, environmental sustainability and availability and access to natural resources.

Content

Block I - Introduction to the management of natural resources

- Natural resources as common goods: governance models
- The production and use of natural resources in today's world: efficiency and limits to growth
- Great models of natural resource management

Block II - The water cycle

- The water cycle and socio-environmental problems
- Legal framework and planning instruments
- The large supply infrastructures
- Water in the rural world: ecosystems, food and energy
- The urban uses of water and its local management
- Water and risk: drought and floods

Block III - Energy systems

- History and Geography of the uses of energy
- Energy systems: definition, components and requirements
- Planning and management of energy systems
- Conflicts around energy
- The change of energy model

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Field trip (PLAB)	8	0.32	CM24, SM30
Practices (PAUL)	16.5	0.66	KM39, SM30, SM32
Teorethical lessons	22.5	0.9	KM39, KM55, SM30, SM32
Type: Supervised			
Practical and fieldtrip exercices	15	0.6	

Preparation of activities	5	0.2
Tutorships	5	0.2
Type: Autonomous		
Information research	15	0.6
Personal study	35	1.4
Reading	25	1

The subject is divided into three blocks. In the first block, an introduction to the management of natural resources will be made. In the second, the planning and management of the water cycle will be addressed. In the third, the management of energy systems will be addressed.

The teaching activities of the subject will be structured as follows:

Theory classes

The following activities will be carried out in the face-to-face theory sessions:

Lectures: presentations by the teaching staff encouraging debate and student participation.
Exercises aimed at the classroom: exercises based on the active participation of the students (usually through informal cooperative work) that will not require previous work.
Cooperative work with preparation. Different formal cooperative work activities will be carried out based on the previous work of the students (readings or preparation of the activity). Some of these activities may require oral presentations by the students.

Classroom practices

A total of 10 practice sessions will be held in the classroom (5 in the water block and 5 in the energy block).

The teaching staff responsible for the practicals in the classroom will conveniently inform about the practical activity to be carried out in each session. As a result of these activities, the students will have to complete different assignments of practical exercises.

Field trip

There will be a field trip that will be specified at the beginning of the course. Attendance at the exit is an essential requirement to be able to be evaluated for the subject.

As a result of the exit, the students will have to make a report. The teaching staff will detail the contents and requirements of the same.

At the beginning of the subject, the teaching staff will explain the protocol of measures and good practices for field trips.

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.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exams	45%	3	0.12	KM39, KM55, SM30, SM32
Field trip repport	15%	0	0	CM24
Practices and reports	30%	0	0	CM24, SM30, SM32
Theory deliveries and activities	10%	0	0	KM39, KM55, SM30, SM32

The evaluation of the subject is based on:

- 3 partial exams (one for each block of the subject): 45% (15% each exam)
- Practical exercises resulting from classroom practices (PAUL), divided equally between the water block and the energy block: 30%
- Field trip report (PCAM): 15%
- Participation in theory sessions (TE): 10%

The final mark will come from the weighted average of the four activities. To pass the subject you must have passed (5) each of the three partial exams and the average of the practical exercises (PAUL).

It is necessary to respect the delivery dates of the tasks established by the teaching staff of the subject.

The grade corresponding to the participation in the theory sessions (TE) will be obtained through different deliveries (individual or group) corresponding to the various activities that the teaching staff may propose during the development of these sessions (debates, summaries, cooperative work, oral presentations...) Some of these activities may require prior preparation. Participation in these activities is not mandatory; however, in those activities that are not attended, the grade will be zero (0), with no possibility of making the delivery at any other time.

The evaluation of the field trip will be done by making a report. To approve the subject, it is mandatory to attend the field trip and hand in the corresponding report.

Review of grades

At the time of carrying out each assessment activity, the teacher will inform the students (through the Virtual Campus) of the procedure and date of review of the qualifications.

Recovery

The three exams and the practical exercises (PAUL) can be recovered, as long as a grade of less than 5 has been obtained. The deliveries of the activities of the theory sessions (TE) and the field trip report are not recoverable The maximum mark for the recovered activities is 5.

Not assessable

Anyone who has not completed and delivered the exam and/or field trip report is considered non-evaluable.

Undelivered activities will be graded as zero (0).

Plagiarism

In the event that the student commits any irregularity that could lead to a significant variation in the grade of an assessment act, this assessment act will be graded with 0, regardless of the disciplinary process that may be instituted. In the event that several irregularities occur in the evaluation acts of the same subject, the final grade for this subject will be 0.

Unique assessment

This subject does NOT provide for the single assessment system.

Bibliography

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Water

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Energy

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Software

None specific beyond the one used during the first two years of the degree.

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan	first semester	morning-mixed
(PCAM) Field practices	1	Catalan	first semester	morning-mixed
(TE) Theory	1	Catalan	first semester	morning-mixed