

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

Code	33113
Name	Integrated study of the natural environment
Cycle	Grade
ECTS Credits	7.5
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1104 - Degree in Environmental Sciences	Faculty of Biological Sciences	4	First term

Subject-matter

Degree	Subject-matter	Character
1104 - Degree in Environmental Sciences	181 - Integrated study of the natural environment	Optional

Coordination

Name	Department
ARMENGOL DIAZ, JAVIER	275 - Microbiology and Ecology
CARBO VALVERDE, ESTER	25 - Plant Biology
ESTRELA NAVARRO, MARIA JOSE	195 - Geography

SUMMARY**INTEGRATED STUDIES OF THE NATURAL ENVIRONMENT**

This is an optional subject of the module: Evaluation and Management of the Natural Environment . The course consists of 7.5 credits that will be taught in the first quarter of the fourth year.

Given the importance of integrating environmental factors and processes, the student is required to know both the methods and techniques of analysis and spatial representation of this integration at different spatial scales.

This course also discusses an integrative approach that requires the current environmental issues, important aspects of management and environmental planning and developing integrated management plans for the natural environment.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

OUTCOMES

1104 - Degree in Environmental Sciences

- Conocer y saber aplicar el procedimiento metodológico para la generación, evaluación y selección de planes de gestión integrada del medio natural.
- Conocer y analizar la problemática ambiental en diferentes tipos de ecosistemas mediterráneos, incluyendo ecosistemas forestales, ecosistemas acuáticos continentales y ecosistemas marinos litorales.

LEARNING OUTCOMES

INTEGRATED STUDIES OF NATURAL ENVIRONMENT

- Capacity for analysis and synthesis
- Ability to learn and ability to apply theory to practice
- Ability to criticism and self criticism
- Ability to generate new ideas (creativity)
- Ability to organize and plan
- Ability to engage with sustainability
- Ability to recognize common problems in interdisciplinary environmental systems. Skills to work in multidisciplinary teams. Cooperation and discussion group problem
- Ability to make decisions, ability to develop and express judgments independently on problems of the environment
- Ability to use information, process data, analyze and synthesize information from data. Interpretation and evaluation of scientific information shown in tables, graphs and statistical expressions, critical of the results

Being more specific:

- Ability to discuss technical aspects and environmental management from the integration of environmental factors and processes
- Knowledge of procedures for the development of mapping the potential and natural processes
- Ability to design sampling in integrated studies.
- Knowledge of methods for the comparative study of biological communities.



DESCRIPTION OF CONTENTS

1. SECTION 1. Integrated analysis of the environmental resources. Study of processes.

GEOMORPHOLOGICAL MAP: structural, lithological, genetic and chronological information. The legend of the geomorphological map. Map reading. Applications to environmental management: geomorphological processes and risks.

CLIMATE MAPPING: sources of climate information (surface network and remote sensing), development and treatment of climate variables, climate risk analysis methodology (heavy rainfall, droughts). Application to climate risk management.

ACTIVE PROCESS MAPS: slope movements, erosion, processes in riverbeds, flood plains, processes in lagoons, coastal processes. Processes linked to certain lithologies. Anthropogenic processes and alteration of natural processes.

SOIL MAPS. Soil mapping: types, objectives, methodologies and criteria to consider for its cartographic representation. Soil Information Systems Management

INTRODUCTION TO INTEGRATED ANALYSIS OF THE ENVIRONMENT Concepts and scientific bases for integrated analysis of the natural environment. Application levels.

2. SECTION 2. Ecological basis for integrated studies of the natural environment

MAIN ENVIRONMENTAL UNITS IN THE BIOSPHERE. Scales of study in Ecology. Environmental units in terrestrial and aquatic ecosystems. Structure and classifications of vegetation. Mapping of biodiversity at local and regional scales. Case studies.

ECOLOGY OF COMMUNITIES AND ECOSYSTEMS. Basic patterns and elementary processes. Quantitative techniques for the management and classification of communities and ecosystems. Parameters used for the study of ecosystems: primary production, abiotic resources, physiological measures, biodiversity. Sampling Design. Metacommunities.

LANDSCAPE ECOLOGY. The origin of landscape ecology. Spatial data analysis in Ecology. Landscape dynamics and organization. Ecological processes in the landscape. Applications of Landscape Ecology.

3. SECTION 3. INTEGRATED STUDIES AND ENVIRONMENTAL PLANNING.

INTEGRATED STUDIES AND ENVIRONMENTAL PLANNING. Environmental planning. Concept and application levels. Methodological procedures. Analytical Methodology. Background. Synthetic Methodology. Background. Mixed Methodologies. Examples of synthetic and analytical methodological approaches.

INTEGRATED STUDIES AND ENVIRONMENTAL MAPPING. MAPPING THE POTENTIAL OF THE NATURAL ENVIRONMENT. Foundations and technical standards for the development of Environmental



Cartography. Geoscientific Cartography or the Potential of the Natural Environment. Objectives and elaboration procedure. Examples.

4. SECTION 4. Applications to environmental management. Case Studies.

INTEGRATED STUDY OF AN AREA OF LAND. Literature review and previous mapping data. Planning and design of the sampling. Data analysis. Development of synthesis and mapping schemes

5. PRACTICE MODULE

INFORMATICS. Office work computer classroom:

1. Geomorphological mapping procedure: topographic basis, aerial photo and digital terrain models. Structure and lithology of the geological map. Identification and interpretation of forms and processes in orthophotos. Preparation of layers of climatic variables for risk analysis.
2. Multivariate analysis. Preparation of matrices with environmental variables and species. Use of PAST for multivariate analysis (CCA, PCA, DCA). Work with bibliography or database data matrices and with own data obtained during the practice sessions. Geospatial analysis of the area/study areas for comparison with field data.
3. Procedure for Mapping the Potential of the Natural Environment: Inventory, Evaluation and Management of Environmental Units. Preparation of integrated environmental mapping of the proposed area.

FIELD:

Application of sampling design techniques for field data acquisition and planning. Obtaining climatic, geomorphological, edaphic and biological data for cabinet work.

Laboratory work and fieldwork are compulsory and evaluable, and the student must have done them in order to apply for the advance call.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	45,00	100
Laboratory practices	15,00	100
Computer classroom practice	12,00	100
Tutorials	3,00	100
Study and independent work	12,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	30,00	0
Preparing lectures	35,00	0
Preparation of practical classes and problem	25,00	0
TOTAL	187,00	

TEACHING METHODOLOGY

For the teaching of the subject of THE NATURAL ENVIRONMENT INTEGRATED STUDIES will be held classroom (theoretical and practical) and seminars. This will be done in groups. Other activities such as tutoring or monitoring of the course work will be carried out individually or in smaller groups than the previous activities.

Activity is also important joint field trips with the presentation of case studies in different Mediterranean ecosystems.

EVALUATION

The subject will be assessed through:

- Objective evidence, consisting of one or more tests that consist of both theoretical and practical issues.
- Evaluation of operational activities from the preparation of papers / reports and / or oral presentations, and / or defenses of case studies.
- Continuous evaluation of each student, based on regular attendance at school and classroom activities, participation and degree of involvement in the teaching-learning process, and skills and attitudes expressed during the development of activities and by resolution of individual questionnaires.

To request an early call for this subject, the student must take into account that You must have completed the compulsory activities indicated in the teaching guide for the subject.



TYPE OF EVALUATION	% FOR THE FINAL SCORE
Test theoretical examination	65
Development of activities in practice (cabinet and field) and / or defense of a case study:	25
Attendance and participation in program activities (lectures, tutorials, seminars, field trips, etc.)	10

To pass the course will have to overcome each of the parties with at least 5 out of 10 in each.

To pass the subject, you must obtain a grade equal to or greater than 5 (out of 10) in the written final exam and in all other activities. After passing the exam, which represents 65% of the final grade, the corresponding% of the rest of the activities will be counted and a weighted final grade will be obtained.

In order to be able to take the theoretical exam it is necessary to have delivered the memory of field practices and computer science, which are obligatory.

In order to pass this exam, it is necessary to pass at least one of each of the parts or blocks in which the subject is divided. The final grade of the theoretical exam will be passed each part with a 4, the average of the three parts and will represent 65% of the final grade. Attendance and participation in scheduled activities accounts for 10% of the final grade.

The practical notes represent a 25% on the final grade, they can be saved only if they have been done in the immediately previous course and whenever the student is interested.

REFERENCES

Basic

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Additional

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