COURSE DATA

DATA SUBJECT

Code: 36838
Name: Ecology
Cycle: Undergraduate Studies
ECTS Credits: 10.5
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1106 - Degree in Biology	Facultat de Ciències Biològiques	3	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
1106 - Degree in Biology	Ecología	COMPULSORY

COORDINATION

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SUMMARY

The subject "Ecology" is a third-year course in the Biology Degree at the University of Valencia. The course is worth of 10.5 ECTS credits (approximately 262.5 hours of student work). It includes, as detailed below, in-person and online activities, theoretical and practical fieldwork, laboratory and computational work, as well as work based on lectures and work independently prepared by the student.

According to the definition once used by the *Ecological Society of America*, "ecology is the scientific discipline concerned with the relationships between organisms and their past, present, and future environments. These relationships include the physiological responses of individuals, the structure and dynamics of populations, the interactions between species, the organization of biological communities, and the flow of matter and energy in ecosystems."

The subject "Ecology" teaches essential knowledge for the training of biologist, knowledge that is important regardless of the focus (research, academic, or professional) and the specialization pursued. It also provides the necessary foundation for some fourth-year subjects and for postgraduate studies. Its position

in the degree program corresponds to a subject that synthesizes knowledge provided by other biological disciplines.

CONTENTS

Ecology of individuals. Ecology of populations. Ecology of interactions between species. Community ecology. Ecosystem ecology. Global ecology. Applied ecology.

- Knowledge and understanding of the relationships between organisms and their environment.

- Knowledge and understanding of the structure and dynamics of populations.

- Knowledge and understanding of interspecific relationships, their dynamics, and their implications.

- Knowledge and understanding of the structure and dynamics of communities, and the logical determinants of specific diversity.

- Knowledge and understanding of energy flows and matter cycles in systems.

- Knowledge of the main ecological patterns and the processes that underlie them.

- Knowledge of the main applications of ecology.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

The Ecology course requires having passed the first-year subjects: Cell Structure, Biology, and The Tree of Life.

COMPETENCES / LEARNING OUTCOMES

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Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.

DESCRIPTION OF CONTENTS

Subject presentation

The professors, their profiles, and how to contact them. Course content: location of the course guide. Online teaching materials. Other information.

THEORY

Part I. Introduction: The Nature of Ecology

Definitions, concept, origin and historical development of ecology

Part II. Ecology of Individuals

The environment and living beings. Environmental diversity and biological diversity. Ecological factors. Environmental heterogeneity, tolerance of organisms, and the notion of the ecological niche. The response of living beings to ecological factors.

Part III. Ecology of Populations

Population and population growth. Intraspecific competition; regulation. Age structure of populations. Spatial and temporal structure of populations: local population distribution. Ecology of reproduction and social interactions. Evolution of life traits: reproductive allocation and habitat.

Part IV. Ecology of Interactions among Species

Interspecific Competition. Niche theory, competitive exclusion principle, and diversity. Predation. Mutualism. Relationships controlled by the resource donor

Part V. Ecology of Communities and Ecosystems

Nature of the community and ecosystem. Energy flow in the ecosystem: primary production, secondary production, and trophic structure. Material flow in the ecosystem: Biogeochemical cycles. Physical structure in the community. Temporal structure of the community (dynamics). Processes and mechanisms of succession. Influence of niche structure on the community. Interactions in food webs. Stability and complexity of food webs. Influence of area and isolation on community structuring. Non-equilibrium situations: disturbances and variable conditions

Part VI. Ecological Synthesis

Diversity patterns, concurrent mechanisms, and global aspects

DEMONSTRATION CLASSES

The adjustment of organisms to environmental factors.

Population growth.

Estimating population size.

Spatial distribution of organisms.

Life tables.

One- and two-species ecological systems (computer simulation).

Studying diversity.

Measuring biomass and primary production in a terrestrial ecosystem.

SEMINARS

The theory professors will present a list of seminar topics, which will primarily focus on practical applications of ecology. The goal is for these seminars to be presented to the class by groups of students.

Students will also be able to attend seminars recommended by the course instructors.

TUTORING

Interactive activities will be offered to help deepen the understanding of key ecological concepts. Questions related to seminar preparation and practical classes may also be addressed. These activities may also address any questions students may have regarding topics already covered

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	9,00

Theory	63,00
Laboratory	29,00
Computer classroom practice	4,00
Total hours	**105,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	58,00
Independent study and work	0,00
Preparation of lessons	51,50
Preparation for assessment activities	48,00
Resolution of case studies	0,00
Total hours	**157,50**

TEACHING METHODOLOGY

ATTENDANCE TO THEORETICAL CLASSES + PRESENTATION

After an initial introductory session, in which the theory professor will detail how the course is organized, the topics in the theoretical program will be explained in theory lectures. Each topic will be presented in a one-hour session and will consist of the professor presenting the content, formulating questions, and discussing the answers. These presentations will focus on the interpretation of tables and figures, as well as methodological aspects. The most general aspects will be highlighted and illustrated with case studies. Additionally, there will be twelve seminar sessions. The theory professor will present a list of at least twelve seminar topics for each semester. Students will be divided into groups for preparation (see below). These topics will be presented to the class and discussed by the entire class.

GROUP TUTORIALS ATTENDANCE

Additionally, there will be nine group tutoring sessions in which, based on a script prepared by the theory faculty and with complementary contributions from students, group tutoring will include solving exercises or practical cases, organizing teaching activities (seminars/practices), clarifying doubts, and discussing issues.

SEMINAR PREPARATION

The seminars will be prepared by working teams, formed by randomly assigning students by the faculty. The teams will be as similar in number as possible. The faculty will randomly assign a topic from the seminar list to each team. The list prepared by the faculty will be ordered, so that this order will determine the chronology of the presentations. Each team will work on its topic according to the information recommended by the theory professors, consulting with them when necessary. The team will prepare a presentation using computerized means. The team will present

their presentation in a time limit of no more than 20 minutes, followed by a 10-minute discussion.

PREPARATION FOR THEORY LESSONS

The time students must dedicate to advance preparation for theory lessons is counted. The teaching materials (screenshots and topic script) for each theory lesson will be available online at least one week before the lesson is held.

ATTENDANCE AT PRACTICAL CLASSES

The practical classes are divided into 9 sessions. Two sessions, two hours each, are held in the computer lab and use simulation programs. Seven laboratory sessions (three hours per session) are dedicated to conducting experiments, applying methods, analyzing materials collected during field sessions, analyzing data, and solving questions and problems. Two additional sessions are held in the field (4 hours per session).

PRESENTATION OF FIELD PRACTICE RESULTS

Both field practices involve two sessions: the first for sampling in the natural environment and the subsequent data analysis. Students, following the instructions provided by the field practice instructor, must submit a report on the results of the data analysis obtained during the field practice sessions. These reports will be prepared during the data analysis sessions of the laboratory practices and will be submitted when instructed by the instructor.

STUDY AND EXAM PREPARATION

The estimated average time students should dedicate to studying for the exams is 48 hours, which includes personalized tutoring provided by the instructor directly or via email.

EXAMS

The time for this includes: a midterm exam on the theory syllabus (first midterm, in January), a midterm exam (second midterm, in June) or a full exam (in June) on the theory syllabus, an exam on the practical syllabus (in the official call in December), and an extraordinary exam (July call) on theory and practicals for those students who did not pass the subject in the June session.

USE OF THE MOODLE PLATFORM

The University of Valencia's MOODLE platform will be used for all activities. The key tools to be used will be:

- Email. MOODLE, through its email module, will allow fluid communication between student and instructor. The instructor will continuously use this method to inform students of any aspect related to the course.

IMPORTANT:

- Only emails from the University of Valencia's email account (alumni.uv.es) will be accepted. Hotmail or other email accounts will be automatically deleted.

- Students must upload a photograph of the type used for their ID to MOODLE.

- News. The news module will be used as the regular source of information. Upon entering MOODLE, students will immediately see any news related to the course.

- Resources. The resources folder will be the place where course materials will be stored: reference sources, images, animations, tutorials, practice scripts, course calendars, etc.

- Assignments. This module will be the starting point for various activities. The teacher-student exchange of materials will take place through this module

EVALUATION

The following distribution is proposed out of a maximum of **100 points** (50 points must be obtained to pass the course):

Learning will be assessed as follows:

	Component	**Points**
(1)	Two midterm exams for the theoretical portion or one comprehensive exam	60
(2)	One exam for the practical portion	20

(3)	Preparation, presentation, and participation in seminars	10
(4)	Presentation of simulation and field practice results	10
	Total	100

- With the exception of the exams, the rest of the activities are optional. If they are not taken, the maximum grade you can earn in the subject will be 80 points.

- The minimum score required to pass the course is 50 points in total. There is no minimum score requirement for the individual sections.

- The exam referred to in (2) of the first table will be held in **December** (OFFICIAL CALL) after completing all the laboratory exercises for the first semester.

- To achieve the highest grade in (3), students must present the seminar.

- To achieve the highest grade in (4), students must attend computer and fieldwork activities, attend calculation sessions, and make presentations in those activities that require it.

- If the subject is not passed in the first sitting of an academic year, the points earned in (3) and (4) will be retained for the second sitting, and no further. Conversely, points earned in (1) and (2) are lost if the subject is not passed.

- The comprehensive exam referred to in (1) will be held simultaneously with the second partial exam, so they are alternative options. The choice between taking two partial exams or one comprehensive exam is free, regardless of the grade obtained in the first partial exam. If the comprehensive exam is not chosen, the grade for the theoretical part in the first call will be obtained from the grade obtained in the two partial exams. In this case, the score for each partial exam will be weighted proportionally to the number of topics it includes

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