

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

<b>Code</b>	33111
<b>Name</b>	Exploitation and control of natural populations
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2023 - 2024

**Study (s)**

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

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1104 - Degree in Environmental Sciences	179 - Exploitation and control of natural populations	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
MESQUITA JOANES, FRANCESC	275 - Microbiology and Ecology
MONROS GONZALEZ, JUAN SALVADOR	275 - Microbiology and Ecology
ORTELLS BAÑERES, RAQUEL PILAR	275 - Microbiology and Ecology

**SUMMARY**

The course "Exploitation and Control of Natural Populations" is a four-month optional subject taught in the fourth year of the Environmental Sciences degree at the University of Valencia, within the Module XI "Optional Subjects", in the Thematic Block of Evaluation and Management of the Natural Environment. The subject, of 4.5 ECTS credits, will deal in an integrated way with all aspects of exploitation and control of natural populations, with special emphasis on the management of hunting, fishing and forest and pests, in accordance with the legislation and taking into account the socio-economic aspects of these activities.

The contents of the subject are structured in 5 theoretical blocks, with a total of 20 topics, and the corresponding practicals, in another block. In the first block, the general context of the study of natural populations will be established, all based on the ecology of populations, presenting the different theoretical models and their general applications to the study of populations. The remaining four blocks will deal with aspects related to the exploitation of populations in



relation to hunting, fishing, forestry and pest management, with each block going into more detail on specific aspects of each activity, in as much depth as possible due to time constraints.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

You must be taking or have taken the subjects of the modules Environmental Technology, Environmental Management and Quality and Social, Economic and Legal Sciences, and have passed at least 120 credits.

## COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

### 1104 - Degree in Environmental Sciences

- Conocer y saber aplicar modelos de explotación sostenible a recursos cinegéticos, pesqueros y forestales.
- Capacidad para elaborar planes de gestión de poblaciones de flora y fauna relativos a especies explotadas y plagas.

## LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

- Practical work involving problem solving, analysis of information and its critical interpretation.
- Knowledge and application of sustainable exploitation models to hunting, fishing and forestry resources.
- Development and implementation of wildlife population management plans for exploited species and pests, exploited species and pests.

## DESCRIPTION OF CONTENTS

### 1. 1. Population Ecology: Models of Sustainable Exploitation

Lesson 1. Natural Population Dynamics: General Concepts and Models

Lesson 2. Spatial Patterns and Metapopulations

Lesson 3. Predator-Predator-Predator Interactions

Lesson 4. Epidemiology: Pests and their Population Models

Lesson 5. Competition and Mutualism



## **2. Exploitation of hunting resources**

Lesson 6. Population Monitoring of Hunting Resources

Lesson 7. Management and Conservation of Hunting Resources

Lesson 8. Social Context of Hunting Exploitation

Lesson 9. Technical Hunting Plans

## **3. Exploitation of fishery resources**

Lesson 10. Fishery Resources Population Survey

Lesson 11. Management and Conservation of Fishery Resources

Lesson 12. Social Context of Fisheries Exploitation

Lesson 13. Technical Fishing Plans

## **4. Exploitation of forest resources**

Lesson 14. Theoretical Models of Forest Harvesting

Lesson 15. Forest Management and Conservation

Lesson 16. Social Context of Forest Harvesting

## **5. Pest Control**

Lesson 17. Pest Population Functioning Patterns

Lesson 18. Pest Management and Management

Lesson 19. Social Context and Economic Factors of Pests

## **6. Practicum**

Practical 1 (Field; 1 session of 4 hours). Visit to a natural area, identification of game and fish species. Use of electric fishing.

Practical 2 (Computer room; 2 sessions of 2 hours). Population models.

Practice 3. (Computer room; 4 sessions of 2 hours). Technical Hunting Plan.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	27,00	100
Computer classroom practice	12,00	100
Laboratory practices	4,00	100
Tutorials	2,00	100
Study and independent work	15,00	0
Preparation of evaluation activities	20,00	0
Preparing lectures	20,00	0
Preparation of practical classes and problem	12,50	0
<b>TOTAL</b>	<b>112,50</b>	

**TEACHING METHODOLOGY****ATTENDANCE AT THEORY CLASSES**

The 20 topics of the theoretical programme will be explained in theory lessons. Each topic will be developed in one hour session and will consist of a presentation of the contents by the professor, formulation of questions and discussion of the answers.

In these presentations, attention will be paid to the

interpretation of tables and figures, and methodological aspects, highlighting the more general aspects, and illustrating these with

case studies. Attendance is compulsory and can be verified by the lecturer on any day of the course.

**ATTENDANCE AT SEMINARS**

During the course, a total of 4 seminars will be held, given by specialists or professionals in different aspects related to the management of protected areas. Attendance is compulsory.

At the end of each of the seminars, the student may be asked to provide written information on what was covered in the seminar, in order to evaluate the student's work.

**PREPARATION OF THEORY LESSONS**

The time the student must spend on advance preparation for theory lessons is counted here. The didactic material (projections and topic script) for each theory lesson will be available online at least one week before the lesson takes place.



### ATTENDANCE TO PRACTICAL CLASSES

The practical classes of the subject will be carried out in the field, in an outing coordinated with other subjects, and in sessions in the computer classroom, which will total 12 hours of attendance. Both activities will cover all the topics proposed in the Practical Programme. Attendance is compulsory, and the teacher will take a roll call to confirm attendance.

At the end of each of the practicals, the student will hand in the results obtained, which will be used for the evaluation of the activity.

### ATTENDANCE TO GROUP TUTORIALS

During the course there will be 2 one-hour group tutorial sessions. In these sessions, various aspects related to the subject will be presented and discussed, such as the presentation of the subject and how it is organised, the organisation and contents of the practicals, the type of evaluation, etc. The attendance is compulsory, and the teacher will take a roll call to confirm attendance.

### EXAM PREPARATION STUDY

Independent study by the student.

### CONDUCT OF EXAMINATIONS

Partial tests may be taken during the course. There will be a single exam at the end of the quarter. The exam will include questions on the theoretical and practical parts of the course, including the content of the seminars given during the course.

### USE OF VIRTUAL CLASSROOM (<http://aulavirtual.uv.es>)

The e-learning platform AULA VIRTUAL of the University of Valencia will be used for all the activities. The main tools to be used will be:

- E-mail. Aula Virtual, through its email module, will allow for fluid communication between student-teacher. The teacher will continuously use this medium to inform the student of any aspect related to the development of the subject.

**IMPORTANT:** only emails from the email account of the Universitat de València will be accepted (alumni.uv.es). "Hotmails" or other email accounts will be automatically deleted.





- News. The news module will be used as a regular means of information. When the student enters in the Virtual Classroom immediately sees any news related to the subject.

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

## EVALUATION

The evaluation will consist of three sections, with the following distribution of points per section:

Written exam of the theoretical part	60 points
Attendance and handing in of assignments for the practical part	30 points
Attendance at activities and participation	10 point
<b>TOTAL</b>	<b>100 points</b>

In order to pass the course, at least 50 points in total and at least 40% of the points in each section must be scored.

In the second sitting of an academic year, the grade of the exams in which at least half of the points obtained in the first sitting are obtained at least half of the points in the first exam session will be retained, and the attendance mark will be kept.

If the mark for the attendance section is less than one third of the marks, the subject cannot be passed in any of the subject in any of the exam sessions of the academic year. No marks will be kept from one academic year to the next.

In order to apply for an advance of this subject, the student must take into account that he/she must have completed the compulsory activities indicated in the subject's teaching guide.

## REFERENCES

### Basic

- Begon, M. (1999). *Ecología animal. Modelos de cuantificación de las poblaciones*. Trillas. México, D.F.
- Vandermeer, J. H. y Goldberg, D. E. (2003). *Population Ecology: First Principles*. Princeton University Press, NJ.
- G. Caughley y A.R.E. Sinclair (1994). *Wildlife ecology and management*. Blackwell Science
- King, M. (1995). *Fisheries Biology, Assessment and Management*. Fishing News Books, Oxford
- Pretzsch, H. (2001) *Modelling Forest Growth*, Blackwell Verlag, Berlin



- Altieri, M.A. & C.I. Nicholls. 2004. Biodiversity and pest management in agroecosystems. The Haworth Press. 2nd. Edition.

### **Additional**

- Barbosa, P. (ed.). 1998. Conservation biological control. Academic Press.
- Horn, D.J. 1988. Ecological approach to pest management. Elsevier Applied Science Publisher.
- USDA Forest Service. (1995) The Forest Service Program for Forest and Rangeland Resources: A Long-Term Strategic Plan, Washington: US Department of Agriculture, Forest Service.
- S. Jennings, M.J. Kaiser y J.D. Reynolds (2000). Marine fisheries ecology. Blackwell Science.
- Groom, M. J.; Meffe, G. K. y Carroll, C. R. (2006). Principles of Conservation Biology. 3ª ed. Sinauer, Sunderland, MA.
- Morrison y colaboradores (1992). Wildlife-habitat relationships. Wisconsin University Press
- B.Williams, J.D. Nichols y M.J. Conroy (2002). Analysis and management of animal populations. Academic Press.
- T.J. Quinn y R.B. Deriso (1999). Quantitative fish dynamics. Oxford University Press.
- D. García-Jalón y colaboradores. (1993). Principios y técnicas de gestión de la pesca en aguas continentales. Mundi-Prensa.