COURSE DATA

DATA SUBJECT

Code: 43280
Name: Birds as bioindicators of ecosystem conservation
Cycle: Master's Degree
ECTS Credits: 3
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2148 - Master's degree in Biodiversity: Conservation and Evolution	Facultat de Ciències Biològiques	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2148 - Master's degree in Biodiversity: Conservation and Evolution	Cross-disciplinary optional subject areas 3	ELECTIVES

COORDINATION

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SUMMARY

"Birds as indicators of the state of conservation of ecosystems" is an optional subject for the master's degree in Biodiversity: conservation and evolution, which takes place every four months and is taught in the specialty of Biodiversity and conservation of ecosystems. The subject includes theoretical and practical topics where it is exposed and works on those aspects in which knowledge of birds helps us to manage and sustain the environment. The student must end up being able to work with birds considering different perspectives in order to conserve species and habitats, considering that the conservation of habitats is the best way to conserve biodiversity. The course is divided into 3 credits for a total 75 hours of work.

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 student must have notions in ecology, botany, zoology, microbiology, geography, statistics. In addition, they must be trained to recognize birds using field guides.

COMPETENCES / LEARNING OUTCOMES

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Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.

Favour intellectual curiosity and encourage responsibility for one's own learning.

Stimulate the capacity for critical reasoning and for argumentation based on rational criteria.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

Students should demonstrate self-directed learning skills for continued academic growth.

To acquire basic skills to develop laboratory work in biomedical research.

DESCRIPTION OF CONTENTS

1. Topic 1

Introduction to Bird Biology. Basic morphology. Taxonomy, systematics and phylogeny in birds. Cryptic species. Current classification and main groups. Controversies.

2. Topic 2

Main evolutionary mechanisms in birds. Key concepts: species and their limits. Ecological niche. Types of interactions. Use of birds in conservation of species and habitats.

3. Topic 3

Indicator species: definition and characteristics. Types of indicators and examples. The use of birds for the conservation of ecosystems: the ease of working with birds. The use of birds as framework species for the conservation of environments. Examples of indicator bird species.

4. Topic 4

Materials and methods for the study of birds. Techniques for the study of individual, population and ecosystem patterns and processes. Qualitative and quantitative methods. The use of the presence/absence dichotomy. Integrated monitoring of populations. Habitat selection. Selection of biotic and abiotic variables for the study of birds as indicators of the health status of ecosystems.

5. Topic 5

Biology of bird populations. Distribution and limiting factors. The risk of the size of the distribution area. The risk of population sizes and population density. Threat factors: habitat loss and fragmentation, introduction of invasive species, exploitation, diseases, stochastic phenomena. The role of history. Bird extinctions: insular and continental species.

6. Topic 6

Birds as indicators of environmental contamination: organochlorine and organophosphate pesticides; rodenticides; heavy metals; plastics and petroleum derivatives; radioactive compounds. Birds as indicators of conservation of the aquatic and terrestrial environment.

7. Topic 7

The role of birds in ecosystems. Birds as providers of ecosystem services: the case of scavenger birds.

8. Topic 8

Movements: dispersion and colonization. Founding populations and island populations. Its application in conservation. Effects of climate change on the phenology and migratory behaviour of birds.

9. Topic 9

The migrations. What they are, where they occur how they occur, why do birds migrate. Wintering and summer communities as a result of migratory processes. Migrations and climate change.

10. Topic 10

Practical applications. Selection of examples with birds as actors in the service of conservation.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	20,00
Seminar	10,00
Total hours	**30,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	5,00
Individual or group project	10,00
Independent study and work	11,00
Preparation of lessons	8,00
Preparation for assessment activities	6,00
Resolution of case studies	5,00
Total hours	**45,00**

TEACHING METHODOLOGY

The 10 topics of the theoretical program of the subject will be presented and explained in theory sessions. Each topic will initially be developed in two-hour sessions and will consist of the presentation of content by the teacher, formulation of questions and participatory debate with the answers of the students. If necessary, there will be extra sessions for more complex topics that require additional time to be able to explain the concepts to the students in detail. In the theoretical sessions, attention will be paid to the interpretation of tables and figures, as well as to methodological aspects. In the theory sessions, the most general aspects of the syllabus will be highlighted, with special emphasis on the transposition to the local context, and these will be illustrated with practical cases.

PRACTICAL SESSIONS

FIELD PRACTICES

Field trips are an essential teaching resource in the subject. For its development, a close and varied geographical environment will be chosen in environments (e.g., coastal wetlands), in which certain aspects of bird conservation and their role as bioindicator organisms of the health status of ecosystems will be addressed, covering both biological aspects as well as those related to other disciplines. There may be both short-term outings (1 day), as well as somewhat longer ones (2 days), depending on the logistical availability and the development of the teaching program. The duration of the field practices is estimated to be around 5 face-to-face teaching hours.

PERSONALIZED TUTORING

The teacher will indicate an attendance schedule for the student, which they can use whenever they consider it necessary. Within this schedule it is planned that students, individually, can attend during the semester to resolve specific questions or doubts about the contents of the subject.

PREPARATION OF LECTURES

The time that the student must dedicate to the advance preparation of the theory sessions is counted here. The didactic material (projections and script of the topic) of each theory session will be available in the Virtual Classroom (https://aulavirtual.uv.es/) at least 48 hours before the session takes place.

STUDY AND EXAM PREPARATION

Student independent study.

EXAMS

A final test will be held at the end of the semester. This final test will include questions from the theoretical and practical parts of the subject. It will not be possible to have materials and notes in the execution of the exams except for a calculator. If necessary, the teacher will provide a form.

USE OF THE VIRTUAL CLASSROOM (http://aulavirtual.uv.es)

For all activities, the Virtual Classroom tele-teaching platform (Moodle 3.0) of the University of Valencia will be used. The main tools that will be used will be:

Email. Virtual Classroom, from its mail module, allows fluid communication between students and teachers. This medium will be used to inform the student of any aspect related to the development of the subject. Regarding the use of this tool, it is established that: 1) only emails from the email account of the University of Valencia of type user@alumni.uv.es will be accepted (other types of email accounts will be automatically deleted), and 2) the student must put an identity card format photograph in the virtual classroom.

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

Means. The resource folder will be the place where materials of the subject will be deposited: reference sources, images, animations, tutorials, practice scripts, course calendars...

Activities. This module will be the starting point for various activities (tasks, quizzes, surveys, etc.). The exchange of teacher-student materials will be carried out through this module.

The Virtual Classroom is considered the official notice board of the subject for exam calls, notification of grades and exam review schedules.

EVALUATION

The evaluation of the subject will take place through a final exam of the theory consisting of questions to be developed, multiple choice questions and/or development of practical cases, as well as in the presentation and defence of a seminar on the content of the subject. The evaluation of the theoretical part will correspond to 80% of the value of the final grade. The evaluation of the practical part will correspond to the remaining 20% and may be carried out together with the theory exam or by submitting a practice report. In some cases, the final exam can be replaced by the realization of an original work or the approach of a research project.

REFERENCES

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