

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

Code	43241
Name	Nematology
Cycle	Master's degree
ECTS Credits	3.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2148 - M.D. in Biodiversity: Conservation and Evolution	Faculty of Biological Sciences	1	Second term

Subject-matter

Degree	Subject-matter	Character
2148 - M.D. in Biodiversity: Conservation and Evolution	3 - Biodiversity and conservation of invertebrates	Optional

Coordination

Name	Department
MONTERO ROYO, FRANCISCO ESTEBAN	355 - Zoology
PEREZ DEL OLMO, ANA	355 - Zoology

SUMMARY

This subject deals with the study of both parasitic and free-living nematodes. Special interest is given to pathogenic species and the role of nematodes in ecosystems, as well as their possible use as bioindicators of ecosystem quality.

The aim is for students to acquire basic knowledge of nematology and its current development, especially its applied aspects. They must also become familiar with the main trophic groups in which they are integrated and the techniques that allow their extraction, collection and identification.

It is essential that they understand the importance of pathogenic species, that they learn to recognise them and assess the damage they can cause, that they are aware of their biological, ecological, economic and health importance.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

None.

OUTCOMES

2148 - M.D. in Biodiversity: Conservation and Evolution

- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- To acquire basic skills to develop laboratory work in biomedical research.
- Be able to make quick and effective decisions in professional or research practice.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- Stimulate the capacity for critical reasoning and for argumentation based on rational criteria.
- Awaken interest in the social and economic application of science.
- Favour intellectual curiosity and encourage responsibility for one's own learning.
- Encourage ethical commitment and environmental awareness.

LEARNING OUTCOMES

To:

- Know the methods for detecting, preparing and studying samples of parasitic nematodes.
- Learn the techniques for extracting samples of edaphic and meiobenthos, as well as how to prepare some structures or organisms.
- Identify organisms by means of simple clues and appropriate bibliography.
- Acquire synthesis skills to be able to gather, in an organised and coherent way, information or data from different sources, by carrying out proposed works.
- Obtain an integrated vision of parasitic and free-living nematodes. Understand the meaning of the knowledge acquired, interrelate them and apply them.



- Acquire basic knowledge of nematology and its current development, especially its applied aspects (experimental model species, bioindicators, biological control).
- Acquire general information on the nature, activities and role of nematodes in different habitats and the techniques for detecting them.
- Assess the interest of phytophagous species and their economic importance in production systems.
- Acquire the necessary knowledge for the control of phytonematological problems, for the use of nematodes as bio-controllers of entomological pests and as indicators of soil quality.

DESCRIPTION OF CONTENTS

1. Nematodes. General concepts.

Introduction. Objectives. Morphological characteristics of parasitic and free-living nematodes. General classification.

2. Detection and study of animal parasitic nematodes.

Study techniques: digestion and other detection methods; dissection, clearing and preparation of microscopic slides.

3. Detection and study of edaphic and meiobenthic nematodes.

Methods and techniques for sampling, extraction, mounting and identification of edaphic and meiobenthic nematodes.

4. Diversity of parasitic nematodes

Observation of morphological features with magnifying glass and microscope. Use of specialised keys.

5. Diversity of edafic nematodes.

Observation of morphological features with magnifying glass and microscope. Use of specialised keys.

6. Diversity of meiobenthic nematodes.

Observation of morphological features with magnifying glass and microscope. Use of specialised keys.



WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	20,00	100
Laboratory practices	10,00	100
Development of individual work	5,00	0
Study and independent work	16,00	0
Preparation of practical classes and problem	6,00	0
Resolution of case studies	18,00	0
TOTAL	75,00	

TEACHING METHODOLOGY

At the beginning of the course there will be an outing to have a first practical contact with the ecological and economic implications of nematofauna, taking advantage of the season of greatest biological activity. The following sessions will begin with a theoretical content session, to later focus on the practical sessions that represent the bulk of the course. The practical activities will also include theoretical questions.

Samples will be taken both in the laboratory and in the field. These will be studied and identified in the laboratory. Students will produce a practical booklet in which they will include all the details about the different study techniques.

EVALUATION

For the assessment of learning, each student will produce a report/booklet on the practical sessions, where it will be necessary to accredit the knowledge acquired, both theoretical and practical. As continuous assessment, the practical sessions will be linked to questionnaires that the student will have to answer. It will also be necessary to show the material worked on during the classes and the presentation of the preparations. The different partial contributions of the qualifications will be the following:

- 1) Report/booklet 50%
- 2) Continuous assessment 50 %

REFERENCES



Basic

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- Starr, J. R., Cook, R. & Bridge, J. 2002. Plant Resistance to Parasitic Nematodes. CABI Publishing, Wallingford, U.K.

Additional

- Abolafia, J. & Pe a-Santiago, R. 2003. Nematodes of the order Rhabditida from Andaluc a Oriental, Spain. The genus *Acrobeloides* (Cobb, 1924) Thorne, 1937 with description of *A. arenicola* sp. n. and a key to its species. *Journal of Nematode Morphology and Systematics*, 5 (2002): 107-130.
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