Mycology

Code: 101026
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500502 Microbiology	OB	3

Contact

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

Although there are no official prerequisites, it is advisable to have studied basic concepts and biological processes in other subjects such as in

Plant Biology, Ecology, or Microbiology.

It would be also appropriate to have a good knowledge of the subjects that are being studied simultaneously along the first semester.

Objectives and Contextualisation

This is a compulsory 3rd year subject, where students should already have achieved an integrative vision both in terms of a general knowledge of the diversity of organisms and biological and ecological processes. This knowledge will be complemented with this subject, where students will be introduced to the study of the fungal world from various perspectives, emphasizing the most basic concepts and skills that will allow the student to develop independently in this field .

General objectives of the subject:

1. Identify the characteristics and phylogenetic position of the main groups of organisms studied by mycologists.

2. Recognize the different structures and composition of the fungal vegetative and reproductive body in relation to its functionality.

3. Distinguish the nutritional strategies of the various groups of organisms studied by mycologists (amoeboid fungi, pseudofungi and true fungi) and their ecological value.

4. Broadly recognize mycological diversity and know how to distinguish the characteristics that define the various groups studied.

5. Interpret and understand the biology (life cycles, reproductive strategies, etc.) of the main groups.

6. Understand the ecological, economic and social importance of the various groups of fungi studied.

6. Recognize and analyze the main fungus-biocenosis / fungus-biotope interactions.

Learning Outcomes

1. CM09 (Competence) Critically review the scientific contributions of women to the study of microorganisms and other sciences related to microbiology.
2. CM10 (Competence) Integrate knowledge and skills from the field of microbiology, working individually and in groups to prepare and present in writing or orally and publicly a scientific work either in English or in one's own language.
3. KM14 (Knowledge) Indicate the structural characteristics of microorganisms, paying special attention to the differences between acellular entities, prokaryotic organisms and single-cell eukaryotes.
4. KM15 (Knowledge) Describe the metabolic and functional diversity of the microbial world, distinguishing the characteristics that define the different taxonomic groups.
5. KM16 (Knowledge) Identify the main relationships established by microorganisms with each other, with other living beings, with their environment and in general with the ecosystem, and the methods for studying these interactions.
6. SM13 (Skill) Relate the basic genetic components, structures and processes of replicative microorganisms and entities with their functions and the different ecophysiological mechanisms of adaptation to their environment.
7. SM14 (Skill) Discover the role of microorganisms as causative agents of diseases in humans, animals and plants and the processes used to control them.

Content

Subject content*:

1. What are fungi? Basic attributes of "fungal" organisms. Fungi in all living things. Classical and modern systematics. Fungal biodiversity.

2. The fungal Thallus. Unicellular and Filamentous forms. Hypha and Mycelia. The fungal cell. The fungal cell wall. Hyphal growth. Fungal Mitosis SPBs.

The organelles. Hyphal modifications.

3. Nutritional strategies: Phagotrophy and Lisotrophy. Metabolism and Physiology. Ecological Factors. Culture media. Control.

4. Reproduction. Asexual and sexual reproduction. Genetics. Genetic compatibility. Heterokaryosis. Parasexuality. Pleomorphism. Biological cycles.

5. Systemathics. Fungal diversity. Grouping criteria. Phylogeny. Molecular biology and its impact on current systematics. Fossil record.

6. The Amoeboid fungi (Amoebozoa). Generalities. Phyl. Myxomycota. Cl. Dictyosteliomycetes. Cl. Myxomycetes. Vital cycle Ecology Other related groups.

7. Pseudofungi (Phyl. Heterokonta. Stramenopiles) Concept of pseudofongi and systematics used. Generalities Cl. Hyphochytriomycetes. Cl. Labyrinthulomycetes.

O. Saprolegniales. Cl. Peronosporomycetes. O. Peronosporales and O.Pitiales: the mildews and other disorders. Morphology, reproduction, ecology.

8. The true Fungi (Fungal kingdom). Systematic conflicts. Characteristics of the vegetative body and breeding structures. "Chytrids sensu lato". Biology, ecology and diversity .

Phyl. Zygomicota. Biology, ecology and diversity. Phyl. Glomeromycota. Ecology and diversity.

9. Ascomycota. Main characteristics of the group. Yeasts: Biology, ecology, diversity and its applications. Saccharomycotina. Taphrinomycotina.

10. Pezizomycotina. Fruit-body-forming Ascomycota. Cl. Pezzizomycetes. Biology. ecology and diversity.

11. Laboulbeniomycetes and Sordariomycetes. Biology. ecology and diversity.

12. Eurotiomycetes. Biology. ecology and diversity.

13. Dothideomycetes. Biology. ecology and diversity.

14. Mitosporic fungi. Diversity, spore-formation, ecology, economic importance.

15. Basidiomycota. CL. Puccinioycetes. Cl. Ustilaginomycetes. Biology. ecology and diversity. Economic importance.

16. Basidiomycota. Agaricomycotina-1. Biology. ecology and diversity. Economic importance.

17. Basidiomycota. Agaricomycotina-2. Biology. ecology and diversity. Economic importance.

18. Fungal symbiosis: Lichens and Mycorhiza

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Seminars	8	0.32	CM09, CM10, KM15, KM16, SM14, CM09
Theory	28	1.12	CM09, CM10, KM14, KM15, KM16, SM13, SM14, CM09
Type: Supervised			
Supervised activities	14	0.56	CM09, CM10, KM14, KM15, KM16, SM13, SM14, CM09
Type: Autonomous			
Autonomous activities	97	3.88	CM09, CM10, KM14, KM15, KM16, SM13, SM14, CM09

The subject of MICOLOGY will be structured from the theoretical classes, from which a series of proposals for complementary training activities will be dealt with: This part of the
content of the subject will be given in the form of*:

PARTICIPATION in THEORETICAL CLASSES: -materials with the help of ICT tools, and complemented with the educational material prepared for this purpose and accessible to students
in the Virtual Campus of the UAB. Class participation will be encouraged in the form of interventions and debates. The student will have to complement the personal study with the topics
explained, and can resort to personalized tutorials in accordance with the requirements that the student and the professor consider necessary

PARTICIPATION IN THE FORUM of the CV: - One or more forums will be activated in order to encourage the participation of students using work tools that encourage interaction,
debate and dynamic learning. In these forums, it will require periodic participation in the form of contributions, the subject of which will be determined by theoretical classes.
The amount and quality of the contributions will be calculated as part of the student's continuous assessment assignments.

SEMINARS: There will be 8 seminar sessions for each of the two groups that will be assigned at the beginning of the course.

The participation is obligatory. In these sessions, combined activities of self-learning and supervised work will be developed in which topics treated in class or complementary topics will be expanded.
The format of these activities can vary from the following: Group work that will be exposed in a specific time (20 min) through ppt presentation to the rest of the class-seminar.
The subject will be chosen by the group among various proposals made by the teacher or generated by the students themselves.

TUTORIES: -To solve the doubts/ problems that arise during the self-learning process, assignment tasks or theoretical classes. They will be done individually or in small
groups depending on the requirements and the areas of the issues to be discussed. The place of performance and the schedule will be taken by mutual agreement between the teacher
and the student (s) concerned.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
1rst part exam (theory)	37,5	1.5	0.06	CM10, KM14, KM15, KM16, SM13, SM14
2nd part exam (theory)	37,5	1.5	0.06	CM10, KM14, KM15, KM16, SM13, SM14
Seminar	25	0	0	CM09, CM10, KM15, KM16, SM13, SM14

The subject will be evaluated based on the scores obtained in the two eliminatory partial examinations (with recovery), in the seminars and the proposed works, as detailed below*:

1) 1st PART EXAM. Eliminatory test exam (4 options, 1 correct), and/ or short answer questions.

This partial represents 37,5% of the final score. With this exam we evaluate the corresponding theoretical content of the subject. A minimal score of 5 is needed to aprove.

2) 2nd PART EXAM. Eliminatory test exam (4 options, 1 correct), and / or short answer questions.

This partial represents 37,5% of the final score. With this exam we evaluate the corresponding theoretical content of the subject. A minimal score of 5 is needed to aprove.

3) RECUPERATION EXAM. Only those who have to recuperate one or two part-exams will have to submit it. It will have the same structure as the partial examinations

and will have the same weight (37,5% each block). It will be necessary to approve each partial with a minimum score of 5 to be able to pass the subject.

To access the ecovery exam, the students must have been previously evaluated in a set of activities whose weight equals to a minimum of two thirds

of the total grade of the subject or module.

4) SEMINARS: The evaluation of the seminars will count 25% of the final grade. The oral presentation and the poster quality will be evaluated.

Non-evaluable: A student receives the qualification of non-evaluable if the number of assessment activities carrie

UNIC EVALUATION

1) THEORY

There will be a unique exam (test type with the possibility of short questi

The recuperation exam (test type with the possibility of short questions) will be held on the same day as in the ca

The exam grade will count for 75% of the final grade.

2) SEMINARS

The evaluation of the seminars will follow the same process as the continuous evaluation.

The grade obtained will account for 25% of the final grade of the subject.

Bibliography

General Mycology

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Field guides

BON, M. (1988). Guía de campo de los hongos de Europa. Omega. Barcelona.

CAMBRA, J., GOMEZ, A. & RULL, J. (1989). Guía de les algues i els líquens dels Països Catalans. Pòrtic. Barcelona.

CETTO, B. (1979-1980). Guía de los hongos de Europa. 3 vol. Omega. Barcelona.

COURTECUISSE, R. & DUHEM, B. (2005). Guía de los Hongos de la Península Ibérica, Europa y Norte de África. Omega. Barcelona.

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MORENO, G., GARCIA MANJON, J.L. & ZUGAZA, A. (1986). La guía INCAFO de los hongos de la Península Ibérica. 2 vol. INCAFO. Madrid.

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SOCIETAT CATALANA DE MICOLOGIA. (eds.) (1982-2010). Bolets de Catalunya. 29 series. Barcelona.

Web Sites of interest

DOCTOR FUNGUS - http://www.doctorfungus.org/

JOURNAL OF THE MYCOLOGICAL SOCIETY OF AMERICA - http://www.mycologia.org

LICHENS - http://helios.bto.ed.ac.uk/bto/microbes/lichen.htm

MYKOWEB.- http://www.mykoweb.com/

TREE OF LIFE - FUNGI - http://tolweb.org/Fungi/2377

ZOOSPORIC FUNGI ONLINE - http://www.botany.uga.edu/zoosporicfungi/

The "Servei de Biblioteques" of the Library provides a link to help with electronic book seraching : <https://ddd.uab.cat/record/22492>

Software

We won't use any specific program

Language list

Name	Group	Language	Semester	Turn
(SEM) Seminars	731	Catalan	first semester	morning-mixed
(SEM) Seminars	732	Catalan	first semester	morning-mixed
(TE) Theory	73	Catalan	first semester	morning-mixed