Universitat Autònoma de Barcelona

2023/2024

Animal and Plant Biology

Code: 106779
ECTS Credits: 6

Degree	Type	Year	Semester
2504604 Environmental Sciences	OB	2	1

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject.
Please note that this information is provisional until 30 November 2023.

Teachers

Jordina Belmonte Soler

Prerequisites

There are no official prerequisites, but it is convenient for students to review the contents related to biology of organisms and systems, as well as to ecology, learnt at high school.

Objectives and Contextualisation

The objectives of the Animal Biology part are to introduce the student to the main groups of animals, their basic characteristics, their position and functional role in ecosystems and their importance in relation to humans from a social, economic and health perspective.

The objectives of the Plant and Fungal Biology (Botany) part are to introduce the student to the main groups of plants and fungus addressed, their respective differential features and the fundamental aspects of their biology, biological function and distribution.

In addition, general notions about systematics and taxonomy are provided, as well as an insight into the phylogenetic relationships among the main groups of animals and plants as a result of evolutionary and adaptive processes.

The ultimate goal is that the students are able to value the importance of all these organisms in the environment, an essential requirement to make good assessments, management actions and legislations.

Learning Outcomes

- KM50 (Knowledge) Identify and assess the biological function of organisms and the plant landscape in relation to an environmental problem.
- KM51 (Knowledge) Identify organisms and biological processes in their environmental context.
- SM50 (Skill) Characterise specimens, populations and biological communities.
- SM51 (Skill) Safely use techniques and instruments for the analysis of biological samples in the field and/or laboratory.

Content

COMMON CONTENTS

Introduction to the subject. The ordering of organisms: foundations of phylogenetic systematics.

PLANT AND FUNGAL BIOLOGY

Block I: Nuclear and somatic organization in the plant and fungal world: Prokaryotes and eukaryotes. Protophytes, Thalophytes and Cormophytes. Asexual and sexual reproduction. Biological cycles. Sporophyte and gametophyte generation.

Block II: Plant Diversity, general characteristics, ecology and interest: Cyanobacteriae and algae; Bryophytes; Vascular cryptogams; Flowering plants.

Block III: Fungal Diversity, general characteristics, ecology and interest: Amoeboid Fungi, Pseudofungi and True Fungi. Lichenized fungi and mycorrhizae.

Block IV: Geobotany: Distribution of plants, determining factors and vegetation dynamics. Vegetation of Catalonia.

ANIMAL BIOLOGY

Block I: Introduction to Zoology. The structural pattern of animals. Animal reproduction. Introduction to animal phylogeny.

Block II: Animal diversity. Poriferans. Cnidarians. Bilateral animals. Protostomes and Deuterostomes. Lophotrochozoans: Flatworms, Annelids and Mollusks. Ecdysozoans: Nematodes and Arthropods. Deuterostomes: Echinoderms and Chordates.

Block III: Animals as natural heritage. Threats to zoological diversity. Causes of conservation "In situ" and "Ex situ". Threat categories. Legal framework for the conservation of threatened fauna in Catalonia and in Spain. Exploitation of animal resources. Fishing, hunting and aquaculture.

Block IV: Animals harmful to humans. Concept of pest. Urban, agricultural and forestry pests. Environmental problems of the use of chemical pesticides. Integrated control and biological control of pests.

Methodology

The methodology used in this subject is based on making the student work the information that is made available to him through different strategies. The theoretical lessons and classroom practical lessons, as well as field and laboratory practical lessons, are conceived in an integrated way so that students will relate the contents of these different activities throughout the subject to achieve the indicated learning objectives. The different activities are described in more detail below.

Theoretical lessons: During these lessons students acquire the basic scientific-technical knowledge of the subject that they must complement with the personal study of the topics addressed. Most of the theoretical classes will consist of master classes, but in some cases other formats can be used. During the theoretical classes, short videos related to the contents worked on during the session will be regularly displayed. Informal cooperative learning techniques will also be used to work on specific concepts or contents. To optimize the work done in class, students will sometimes be asked to previously work of the contents of the next session. This previous work may consist on searching for information, watching videos or solving certain questions.

Classroom practical lessons: During the two sessions of classroom practical lessons, framed in the syllabus of Animal Biology, students will work on a topic of interest related to applied Zoology. This work will be done in small groups and based on materials provided by the teacher or obtained autonomously. In the first session the topic will be introduced, the groups will be made, the material will be provided and work will begin. In the second session, the results of the work of each group (mostly done autonomously) will be presented, there will be a general discussion and an evaluation of the activity.

Tutorials: Personalized or group tutorials will be agreed with students who request for them either in class or by email.

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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classroom practical lessons	2	0.08	KM50, KM51, KM50
Field practical lessons	9	0.36	KM50, KM51, SM50, SM51, KM50
Laboratory practical lessons	9	0.36	KM50, SM50, SM51, KM50
Theoretical lessons	28	1.12	KM50, KM51, SM50, KM50
Type: Supervised			
Tutorials	10	0.4	
Type: Autonomous			
Search for information and problem solving	12	0.48	
Study and self-learning	72	2.88	

Assessment

The evaluation of this subject is carried out throughout the course and consists of the following evaluation activities:

Partial exams:

In these exams, the knowledge achieved by the student will be evaluated individually.

There will be 2 eliminatory partial exams, one for the part on Plant and Fungal Biology and another one for the syllabus on Animal Biology.

The grade corresponding to the two partial exams will have a weight of 60% on the final grade of the subject (30% each of the two parts).

Final exam:

Students who do not pass any of the two partial exams with a minimum grade of 5 out of 10 must take the final exam. Students who wish to improve the grade obtained in the partial exams may do so by also taking the final exam. Taking the final exam implies that the grade previously obtained in the corresponding partial exam will be lost.

Evaluation of classroom practical lessons:

The grade corresponding to the classroom practices will have a weight of 10% on the final grade of the subject.

Evaluation of field and laboratory practical lessons:

The grade corresponding to field and laboratory practical lessons will have a weight of 30% on the final grade of the subject.

Field practical lesson (Animal Biology): This grade will count 10% of the final grade of the subject.

Laboratory and field practical lessons (Botany): At the end of each practical session students will be evaluated by means of a small exercise that will contribute 25% to the final grade of the Botanypractical lessons. 75% of the grade of Botany practical lessons will be obtained in the final practical exam, which will be a written exam based on the contents learned in the field and laboratory practical activities. The grade of the Botany practical lessons will count 20% of the final grade of the subject and must not be less than 4.5 to be weighed with the grade obtained for the Animal Biology field practical lesson.

Calculation of the final grade of the subject:

The grades of the different teaching modalities (theory and classroom field and laboratory practical lessons) cannot be weighted if the theory grade of any of the two parts (Animal Biology, and Plant and Fungal Biology) is less than 5.

The grade of the subject will result from making the arithmetic mean between the two parts (Animal Biology, and Plant and Fungal Biology). This average can only be made if the grade of each of the parts is equal to or greater than 5 (exceptionally 4.5). In any case, to pass the subject it is necessary to obtain an overall grade equal to or greater than 5.

Single evaluation:

Students who take advantage of the single evaluation must attend the field practical lesson of Animal Biology on a mandatory basis. As for the field and laboratory practical lessons of Plant and Fungal Biology, there is no obligation to attend. The single evaluation will consist of a synthesis exam on the contents of the entire theory program (60% of the final grade), in a test on the contents of the practical lessons of Plant and Fungal Biology (20% of the final grade) and in the delivery of evaluative evidence corresponding to the classroom practical lessons and the field practical lesson of Animal Biology (10% of the final grade each). The single evaluation exam will be done coinciding with the date set in the calendar for the final exam of theory and practices of Plant and Fungal Biology, with the right to a theoretical recovery exam if necessary.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes

Evaluation of classroom practical lessons	10%	1	0.04	KM50
Evaluation of field and laboratory practical lessons	30%	3	0.12	KM50, KM51, SM50, SM51
Partial exam 1 (Plant and Fungal Biology)	30%	2	0.08	KM50, KM51, SM50
Partial exam 2 (Animal Biology)	30%	2	0.08	KM50, KM51, SM50

Bibliography

Common resources

In this link, you will find an infographic prepared by the Library Service to facilitate the location of electronic books:

http://www.uab.cat/doc/BibliografiaCursDigital

• IUCN (International Union for Conservation of Nature): http://www.iucn.org/

• IUCN Red List web site: http://www.iucnredlist.org/

• Ministry for the ecological transition and the demographic challenge. National inventories:

https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/

• Ministry for the ecological transition and the demographic challenge. Species conservation:

https://www.miteco.gob.es/es/biodiversidad/temas/conservacion-de-especies/

• National Museum of Natural Sciences of Madrid (CSIC): http://www.mncn.csic.es/

• Natural History Museum, Londres: http://www.nhm.ac.uk/

• Tree of Life web Project: http:// tolweb.org/tree/

Animal Biology

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- RUPPERT E., FOX R. i BARNES R. (2004). Invertebrate Zoology. A Functional Evolutionary Approach. Setena Edició. Thompson. Brooks/Cole. USA

- KARDONG, K.V. (2006). Vertebrados. Anatomía comparada, función y evolución. McGraw-Hill.

Interamericana.

- HICKMAN, C.P., ROBERTS, L.S., KEENS, L., LARSON, A., L'ANSON, M., EISENHOUR, D.J. (2009).

Principios integrales de Zoologia. Ed. Interamericana. 18ª edició.

- BARRIENTOS, J.A. (2004). Curso práctico de Entomología. Asociación Española de Entomología. CIBIO-UAB. Manuals de la Universitat Autònoma de Barcelona.

- BERGBAUER, M. i HUMBERG, B. (2001) Flora y fauna submarina del Mar Meditarráneo. Ed. Omega.

- HISTÒRIA NATURAL dels Països Catalans. (1991) Vols. 8-13. Ed. Enciclopèdia Catalana.

- B.A. Markert, A.M. Breure, H.G. Zechmeister (2003) Bioindicators and biomonitors. Elsevier Science Ltd.

- JACAS, J., CABALLERO, P. i AVILLA, J. (eds) (2005). El control biológico de plagas y enfermedades. Universitat Jaime I Universidad pública de Navarra.

- JIMÉNEZ PÉREZ, I. i DELIBES DE CASTRO, M. (eds) (2005) Al borde de la extinción: una visión integral de la recuperación de fauna amenazada en España. EVREN. Valencia

Web links:

• Animal Diversity Web: http://animaldiversity.ummz.umich.edu/

• International Commission on Zoological Nomenclature: http://www.iczn.org/

Plant and Fungal Biology

Theory:

Bresinsky, A. et al. 2013. Strasburger's Plant Sciences (Including Prokaryotes and Fungi). Springer. Berlin.[Recurs electrònic disponible a la UAB]

Evert, R. & Eichhorn, S. 2013. Raven Biology of plants. 8th ed. W.H. Freeman & Company. New York.

Folch, R. 1986. La vegetació dels Països Catalans. Ketres Ed., Barcelona. Disponible en pdf a: https://blogs.iec.cat/ichn/la-vegetacio-dels-paisos-catalans/

Folch, R., Franquesa, T. & Camarasa, J.M. 1984. Història Natural dels Països Catalans, vol 7: Vegetació. Enciclopèdia Catalana. Barcelona.

Izco, J. et al. 2004. Botánica. McGraw-Hill-Interamericana. Madrid.

Lee, R. E. 2008. Phycology. 4th ed. Cambridge University Press. Cambridge. UK.

Llimona, X. et al. 1985. Història Natural dels Països Catalans, vol. 4: Plantes inferiors. Enciclopèdia Catalana. Barcelona.

Masalles, R. M. et al. 1988. Història Natural dels Països Catalans, vol. 6: Plantes superiors. Enciclopèdia Catalana. Barcelona.

Mauseth, J. D. 2017. Botany. An Introduction to Plant Biology. 6th ed. Multimedia enhanced edition. Jones & Bartlett Learning. Burlington.

Nabors, M. W. 2006. Introducción a la Botánica. Pearson Addison Wesley Educación. Madrid. [Recurs electrònic disponible a la UAB]

Practical lessons:

Bolòs, O. de & Vigo, J. 1984-2001. Vols. I-IV. Flora dels Països Catalans. Barcino. Barcelona.

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Bonnier G. & De Layens, G. 1990. Claves para la determinación de plantas vasculares. Omega. Barcelona.

Cambra, J. et al. 1989. Guia de les algues i els líquens dels Països Catalans. Pòrtic. Barcelona.

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Font Quer, P. 2009. Diccionario de Botánica. 4a ed. Península. Barcelona.

Font Quer, P. 2015. Iniciació a la Botànica, 3a ed. revisada i actualitzada per Vallès, J. i Vigo, J. Edicions de la Universitat de Barcelona. Barcelona.

Gerhardt, E. et al. 2000. Hongos de España y de Europa. Omega. Barcelona.

Llistosella, J. & Sánchez-Cuixart, A. 2004. L'herbari. Arbres, arbusts i lianes. Edicions de la Universitat de Barcelona. Barcelona.

Llistosella, J. & Sánchez-Cuixart, A. 2008. L'herbari: Mates, herbes i falgueres. Edicions de la Universitat de Barcelona. Barcelona.

Llistosella, J. & Sánchez-Cuixart, A. 2015. Guia il·lustrada per a conèixer els arbres. Edicions de la Universitat de Barcelona. Barcelona.

Llistosella, J. & Sánchez-Cuixart, A. 2020. Guia il·lustrada per a conèixer els arbusts i les lianes. Edicions de la Universitat de Barcelona. Barcelona.

Llistosella, J. & Bernal, M. 2022. Manual pràctic de botànica. Morfologia de les plantes vasculars. Edicions de la Universitat de Barcelona. Barcelona.

López González, G. 2001. Los árboles y arbustos de la Península Ibérica e Islas Baleares. Tomos I y II. Ed. Mundi-Prensa. [Recurs electrònic disponible a la UAB]

Recasens, J. 2000. Botànica agrícola. Plantes útils i males herbes. Universitat de Lleida. [Recurs electrònic disponible a la UAB]

Wirth, V. et al. 2004. Guía de campo de líquenes, musgos y hepáticas. Omega. Barcelona.

Software

No specific software is required.