Universitat Autònoma de Barcelona

2020/2021

Ecology

Code: 100768
ECTS Credits: 6

Degree	Type	Year	Semester
2500250 Biology	OB	3	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

Name: Anselm Rodrigo Domínguez
Email: Anselm.Rodrigo@uab.cat

Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

Javier Retana Alumbreros

Prerequisites

There are no official prerequisites, but it is assumed that the student has previously acquired enough solid knowledge on subjects like: Biostatistics, Botany, Zoology, Extension of Zoology and Genetics

Objectives and Contextualisation

This is a general subject that introduces the student to concepts and basic methodologies of Ecology. The subject also includes an approach to most current topics around this science.

This subject provides the basic contents and methodologies for the study of the structure and dynamics of natural systems in three basic levels of organization:

1. Populations: studding the concept of population and introducing students in techniques of sampling abundance of organisms, in demography ecology and in population dynamics.
2. Communities: teaching the student to evaluate the structure of the communities, the interactions between species and their manifestations at community level (food webs)
3. Ecosystems: Introducing the student in the exchange of matter and energy in food webs, as a preliminary step to the study of biogeochemical cycles wihich will be studied mainly in the Biosphere Sciences subject

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Apply statistical and computer resources to the interpretation of data.
- Be able to analyse and synthesise
- Be able to organise and plan.

- Characterise, manage, conserve and restore populations, communities and ecosystems.
- Develop a sensibility towards environmental issues.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- Understand the processes that determine the functioning of living beings in each of their levels of organisation.
- Work in teams.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Analyse a situation and identify its points for improvement.
3. Apply statistical and computer resources to the interpretation of data.
4. Be able to analyse and synthesise.
5. Be able to manage, conserve and restore all kinds of populations, communities and ecosystems.
6. Be able to organise and plan.
7. Critically analyse the principles, values and procedures that govern the exercise of the profession.
8. Describe and classify all kinds of populations, communities and ecosystems.
9. Develop a sensibility towards environmental issues.
10. Identify the different levels of biological organisation and understand how these are all integrated on a global scale.
11. Interpret the complexity of the global dynamics of natural systems on their different scales of analysis.
12. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
13. Propose new methods or well-founded alternative solutions.
14. Propose viable projects and actions to boost social, economic and environmental benefits.
15. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
16. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
17. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
18. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
19. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
20. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
21. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
22. Work in teams.

Content

The subject contents are organized into 11 topics

Introduction to Ecology
Organisms responses to environmental factors
Populations: basic demographic concepts and processes
Population dynamics
Species interactions
Composition and structure of communities
Community dynamics - Disturbances
Trophic webs
The flux of energy and matter through ecosystems
Ecological succession
Global change

"*Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents

Methodology

The training activities are organized into three main blocks: theoretical expository classes, seminars on various topics of ecology prepared by the students themselves and practices.

Theoretical classes

The theoretical classes are developed through expository master classes by the professors. To follow the classes the student will have a complementary material that will facilitate the monitoring of the class. This material will be previously available in the moddle classroom of the subject. Interposed between the theoretical classes, which will be organized approximately in three blocks, there are between three and five theory sessions where the students discuss with the teacher the answer of a series of short questions about the content given in the expository classes and that the students have previously available. At the beginning of this class, for 10-15 minutes, students should answer one of the questions individually and in writing. The correction of this answer by the teacher is part of the evaluation of the theoretical part. The rest of the question session consists of discussing the answer of the questions that the students propose from the wide list already available.

Debate sessions

At the beginning of the course a series of discussion topics on ecology issues are proposed that can be discussed from 2 points of view. The students are organized in groups and each group is assigned a topic and one of the possible approaches. Each group must document and try to argue the convenience of their approach or point of view on the subject. The result is shown in an oral presentation to classmates and the teacher where the students of the group must defend their point of view in contrast to the other point.

Practices

The practices are carried out in a group and consist of a field trip of a whole day in which data is collected directly in the field by the students. From thedata taken by the students themselves, a small work must be done in the format of a scientific article. In order to make data processing, students will also have a computer practice session with the teacher.

*The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Computer practices	4	0.16	3, 11, 4, 22
Debate sessions (classroom practices)	5	0.2	11, 9, 4, 22
Field practices	8	0.32	8, 4, 22
Theoretical classes	32	1.28	5, 8, 10, 11, 9
Type: Autonomous			
Personal study	70	2.8	5, 10, 11
Preparation of the debate sessions	12	0.48	4, 22
Preparation of the memory of practices	12	0.48	3, 4, 22

Assessment

The evaluation will be done in three blocks: the theoretical part, the debate sessions and the practices.

Theoretical part (60% of the final grade, individual grade)

The answer to the questions asked in class, see the methodology section, 10% of the final qualification.

A first partial written exam approximately midway through the semester. Represents 25% of the final qualification.

A second partial written exam at the end of the theoretical part. Represents 25% of the final qualification.

In case the joint note of the two partial exams is equal to or greater than 4 out of 10, the average can be calculated for the overall score. If the mark of the two partials does not reach 4, it will be necessary to go necessarily to the final exam if the student wants to pass the subject.

Final exam, an exam that includes the contents examined in the two partials (50% of the final qualification). This exam can be done by all students who want to improve their qualification. In the case that students who have passed the partial exams but want to improve the note are presented, they should not renounce to the partial marks so that they will always be average with the highest mark, either partials or this final exam. To be able to make average with the rest of the qualifications, the student has to reach a minimum of 4 out of 10 for this final exam.

Debate sessions (20% of the final grade)

The evaluation of this content consists of two parts: an oral presentation to the classmates and the teacher where the groups must defend their point of view (10% of final qualification, individual note) and a written text explaining the main arguments and justifying the degree of rigor of the two positions of one of the other debates (10% of the final qualification, group qualification).

Practices (20% of the final qualification, group qualification)

The teacher's assessment of the work in the form of a scientific article, th
In order to pass the subject, the student must achieve a minimum of 4 ou

General aspects of the evaluation

The student must take a minimum of 5 out of 10 to pass the course.
To participate in the recovery exam, students must have been previously
The attendance to the practical sessions (or field trips) is mandatory. The

Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Classroom questions	10	0.75	0.03	5, 8, 10, 11, 4
Partial or final exams	50	6	0.24	20, 5, 8, 10, 11, 19, 18, 4
Practices document	20	0	0	1, 2, 3, 12, 13, 4, 6, 22
Presentation of the debate session	10	0.25	0.01	21, 7, 13, 14, 17, 15, 16, 9, 4, 22
Written document about a debate session	10	0	0	9, 4, 6, 22

Bibliography

Begon M., Townsed C.R., Harper J.L. (2006) Ecology. From Individuals to Ecosystems (4ª ed.). Blackwell Publishing, Oxford

Gotelli N. J. (2001) A primer of Ecology. (3º ed.). Sinauer Associates Inc.,Sunderland, Massachussets.

Krebs CJ (2001) Ecology: The Experimental Analysis of Distribution and Abundance (5ª ed.). Benjamin-Cummings Publishers Co.

Margalef (1986) Ecología (2ª ed), Omega, Barcelona

Molles M.C. (2006) Ecología: conceptos y aplicaciones. McGraw-Hill, Madrid

Odum E.P., Warret G.W. (2006) Fundamentos de Ecología (5ª ed.). Internacional

Pianka E.R. (2000) Evolutionary Ecology. 6th. ed. Addison Wesley Longman, San Francisco.

Piñol & Martínez-Vilalta (2006) Ecología con números. Lynx, Bellaterra, Barcelona.

Ricklefs R.E., Miller G.L. (2000) Ecology (4ª ed.). W.H. Freeman & Co., New York.

Thompson Editores, México.

Townsend C.R., Harper J.L., Begon M. (2003) Essentials of Ecology (2ª Ed.). Blackwell Science, Oxford

Web pages

http://www.ecologiaconnumeros.uab.es/