

## Course guide

### 390101 - BG - General Biology

Last modified: 20/06/2023

**Unit in charge:** Barcelona School of Agri-Food and Biosystems Engineering  
**Teaching unit:** 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

**Degree:** BACHELOR'S DEGREE IN BIOSYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).  
BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Compulsory subject).  
BACHELOR'S DEGREE IN AGRONOMIC SCIENCE ENGINEERING (Syllabus 2018). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish

#### LECTURER

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**Coordinating lecturer:** Sorribas Royo, Francisco Javier

**Others:** Sorribas Olivera, Marcel  
Verdu Gonzalez, Antonio Maria  
Mas Serra, Maria Teresa  
Sorribas Royo, Francisco Javier  
Gualda Manzano, Emilio Jose

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

2. Knowledge of the fundamental concepts of animal and vegetal biology related to engineering.

**Transversal:**

1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

#### TEACHING METHODOLOGY

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The hours of directed learning consist of:

- Theoretical classes (large group), the teacher makes an exhibition of three parts: (1) introduction of the learning objectives, (2) presentation of the basic concepts (3) seek students involvement through questions, in order to relate these concepts.
- Practical classes (small group) to encourage students to carry out activities that are proposed and described in the laboratory guidelines, in order to learn various methodologies involved in Plant Biology.

The student has support material (such as diagrams and photographs to support the theoretical classes, research papers, the laboratory guidelines and references to complementary readings, link to thematic Internet pages, etc.) in ATENEA. It also promotes independent learning, particularly through the interaction that takes place in the classroom.

#### LEARNING OBJECTIVES OF THE SUBJECT

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After General Biology subject, the student should be able to:

- Recognize the characteristics of living organisms, their complexity and their interactions with the environment (what are they?, where do they come from?, how do they change?, and why do they change?).
- Understanding the molecular basis of life and the mechanisms that originate the biological diversity.
- Identify the major groups of living organisms
- Acquire knowledge of the characteristics and processes of the main ecosystems and habitats.
- Develop skills in laboratory techniques



## STUDY LOAD

Type	Hours	Percentage
Hours large group	40,0	26.67
Hours small group	20,0	13.33
Self study	90,0	60.00

**Total learning time:** 150 h

## CONTENTS

### THE CELL

**Description:**

- The evolution framework of Biology
- Cellular organization
- Cellular pathways of energetic metabolism
- The cell cycle
- The DNA and its role in heredity
- The genome of virus, prokaryotes, eukaryotes and its expression

**Related activities:**

Activity 1: Theory lessons

Activity 2: Tests

Activity 3: Biology laboratory practices

**Full-or-part-time:** 52h 30m

Theory classes: 15h

Laboratory classes: 6h

Self study : 31h 30m

### EVOLUTION OF DIVERSITY

**Description:**

- Evolutionary processes, speciation, phylogeny, taxonomy
- Prokaryota domains: Bacteria and Archaea
- The protists and the emergence of Eukarya
- The biology and diversity of fungi
- Plants: from the sea to land
- The form of animal life: body plans and diversity
- Composition and structure of the biocenosis

**Related activities:**

Activity 1: Theoretical lessons

Activity 2: Field assessment tests

Activity 3: Practices of biology laboratory

**Full-or-part-time:** 98h

Theory classes: 25h

Laboratory classes: 14h

Self study : 59h

## ACTIVITIES

### ACTIVITY 1. THEORY LESSONS

**Description:**

The content of the subject is organized in 2 thematic blocks, with multimedia support and facilitating the participation of students during the duration of the sessions (1 or 2 hours)

**Full-or-part-time:** 100h

Theory classes: 40h

Self study: 60h

### ACTIVITY 2. INDIVIDUAL TESTS

**Description:**

There will be two exams, on the dates assigned to the course calendar, which will include theoretical (T1 and T2) and practical (P1 and P2). The exams will be multiple-choice tests with some short-answer questions

**Full-or-part-time:** 4h

Theory classes: 2h

Laboratory classes: 2h

### ACTIVITY 3: BIOLOGY LABORATORY PRACTICES

**Description:**

At the Atenea intranet (Moodle), the practical guideline for the contents of the 9 laboratory practices sessions of 2 hours duration is available. The student must read the script before. At the beginning of each session the basic rules for the correct development of the practices are reviewed and the most important aspects of the experimental work are discussed.

**Full-or-part-time:** 45h

Laboratory classes: 18h

Self study: 27h

### ACTIVITY 4. LIBRARY ACTIVITY

**Description:**

- Session to learn about the campus library services
- Search of bibliographic material related to the subject

**Related competencies :**

06 URI N1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

**Full-or-part-time:** 3h

Laboratory classes: 2h

Self study: 1h

## ACTIVITY 5. SUBJECT TOPICS ON VIRTUAL CLASSROOM

### Description:

In the virtual classroom there is material available for monitoring the activities of the subject:

- presentations of the theory sessions (activity 1)
- practice guidelines (activities 4 and 5)
- documents updated, or links to the internet, about the contents of the subject, which are part of the assessment material.

### Full-or-part-time: 30h

Self study: 30h

## GRADING SYSTEM

There will be two exams, on the dates assigned to the course calendar, which will include theoretical (T1 and T2) and practical (P1 and P2). The exams will be multiple-choice tests with some short-answer questions. In addition, attendance and attitude to the practical sessions will be considered for calculation the final mark (IP). The laboratory practicals will be carried out in pairs. The pairs will be formed by the subject coordinator from the list of students in each group. Each group will be assigned a working place in the laboratory, which will be maintained during all the practicals. Attendance at each laboratory practical will be marked with 0.055 points, and attitude between 0.056 and -0.056 points.

The final mark for the course will be calculated according to the following expression:

$$\text{Final course mark} = 0.3 T1 + 0.15 P1 + 0.3 T2 + 0.15 P2 + 0.1 IP$$

Those who do not pass the course (minimum final mark = 5.0) may sit the re-evaluation test for the whole course.

The final mark of the re-evaluation will be the result of the test.

Students who have already passed the subject and those who have been graded as not presented will not be allowed to take the re-evaluation.

## EXAMINATION RULES.

## BIBLIOGRAPHY

### Basic:

- Solomon, E.P.; Berg, L.R.; Martin, D.W. Biología. 5a ed. Mèxic: McGraw-Hill, 2001. ISBN 970103368X.
- Purves, William K. Vida : la ciencia de la biología. 6ª ed. Buenos Aires ; Madrid [etc.]: Editorial Médica Panamericana, 2003. ISBN 8479036761.

### Complementary:

- Mestres i Naval, Francesc. De generació en generació : com rebem i transmetem els gens. Barcelona: Edicions de la Universitat de Barcelona, [2022]. ISBN 9788491687863.
- Montoliu, Lluís. ¿Por qué mi hijo tiene una enfermedad rara?. Primera edición. Pamplona: Next Door Publishers, febrero 2023. ISBN 9788412630008.
- Montoliu, Lluís; Romero Márquez, Jesús. Genes de colores. Primera edición. Pamplona: Next Door Publishers, abril 2022. ISBN 9788412489422.
- Raven, Peter H.; Evert, Ray F.; Eichhorn, Susan E. Biología de las plantas (Vol. 1) [on line]. Barcelona [etc.]: Reverté, 1991-1992 [ Consultation : 21/07/2022 ]. Available on : [https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=7804](https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=7804). ISBN 8429118438.
- Madigan, Michael T.; Martinko, John M.; Parker, Jack. Brock biología de los microorganismos [on line]. 10ª ed. Madrid [etc.]: Prentice Hall, 2004 [ Consultation : 26/07/2022 ]. Available on : [https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=5850](https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=5850). ISBN 8420536792.
- Alexopoulos, C.J.; Mims, C.W. Introducción a la Micología. Barcelona: Omega, 1985. ISBN 842820747X.
- Klug, W.; Cummings, M.; Spencer, C.A. Conceptos de genética [on line]. Madrid: Pearson Alhambra, 2008 [Consultation: 26/07/2022 ]. Available on :



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- Hickman, Cleveland P. Principios integrales de zoología. 14ª ed. Madrid: McGraw-Hill, 2009. ISBN 9788448168896.

- Raven, Peter H; Evert, Ray Franklin; Eichhorn, Susan E; Santamaria, Sergi; Lloret Maya, Francisco; Cardona i Florit, M. Àngels. Biología de las plantas (Vol. 2) [on line]. Barcelona: Editorial Reverté, [2015] [Consultation: 21/07/2022]. Available on: [https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=7805](https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=7805). ISBN 9788429194456.