

390101 - BG - General Biology

Coordinating unit:	390 - ESAB - Barcelona School of Agricultural Engineering
Teaching unit:	745 - EAB - Department of Agri-Food Engineering and Biotechnology
Academic year:	2019
Degree:	BACHELOR'S DEGREE IN AGRONOMIC SCIENCE ENGINEERING (Syllabus 2018). (Teaching unit Compulsory) BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AGRICULTURAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AGRICULTURAL, ENVIRONMENTAL AND LANDSCAPE ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN BIOSYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits:	6
Teaching languages:	Catalan, Spanish

Teaching staff

Coordinator:	Almirall Malivern, Antonio Rafael
Others:	Roig, Irma Rull, Aurora Rivera, Ana Verdu Gonzalez, Antonio Maria Mas Serra, Maria Teresa

Degree competences to which the subject contributes

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.

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Teaching methodology

The hours of directed learning consist:

- Theoretical classes (large group), the teacher makes an exhibition of three parts: (1) introduce the learning objectives, (2) present the basic concepts (3) search for the implication of students from one or more 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 scripts of practices, in order to learn various methodologies involved in Plant Biology.
- Guiding students in the elaboration of deliverable work of bibliographic research, in order to recognize and consult the information sources to perform specific work, as well as support for the realization and synthesis of experimental results work.

The student has support material (such as diagrams and photographs to support the theory classes, issue papers, the script of practical references to complementary readings, link to thematic Internet pages, etc.) to ATENEA. It also promotes independent learning, particularly through the deliverable work and through the interaction that is looking for at the theoretical classes.

Learning objectives of the subject

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

- Recognize the characteristics of living organisms, their complexity and their interactions with their environment (What they are?, Where they come from?, How the change?, Why they change?).
- Understanding the molecular basis of life and the mechanisms that facilitate the genesis of biological diversity.
- Identify main groups of living organisms
- Acquire knowledge of the characteristics and processes of the main ecosystems and habitats.
- Develop skills in laboratory techniques

Study load

Total learning time: 150h	Hours large group:	40h	26.67%
	Hours medium group:	0h	0.00%
	Hours small group:	20h	13.33%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

<p>THE CELL</p>	<p>Learning time: 40h Theory classes: 10h Laboratory classes: 5h Self study : 25h</p>
<p>Description:</p> <ul style="list-style-type: none"> - The evolution framework of Biology - Cellular organization - Cellular pathways of energetic metabolism <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: Theory lessons Activity 2: Tests Activity 3: Non-attendance assessment and monitoring tests Activity 4: Biology laboratory practices Activity 7: Preparation of subjects in virtual classroom 	
<p>INFORMATION AND HERITAGE</p>	<p>Learning time: 40h Theory classes: 10h Laboratory classes: 7h Self study : 23h</p>
<p>Description:</p> <ul style="list-style-type: none"> - Information and heritage: Cell cycle - DNA and its role in heredity - The genome of viruses, prokaryotes, eukaryotes and its expression <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: Theory lessons Activity 2: Attendet tests Activity 3: Non-attendance assessment and monitoring tests Activity 4: Biology laboratory practices Activity 5: Computer classroom practices Activity 7: Preparation of subjects in virtual classroom 	

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<p>EVOLUTIONARY PROCESSES</p>	<p>Learning time: 40h Theory classes: 10h Laboratory classes: 7h Self study : 23h</p>
<p>Description:</p> <ul style="list-style-type: none"> - The origin and history of life on Earth - The mechanism of evolution. Ecological factors. - Species concept and the use of phylogenies <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: Theoretical lessons Activity 2: Field assessment tests Activity 3: Assessment and non-attendance tests Activity 4: Practices of biology laboratory Activity 7: Preparation of subjects in virtual classroom 	
<p>EVOLUTION OF DIVERSITY</p>	<p>Learning time: 40h Theory classes: 10h Laboratory classes: 7h Self study : 23h</p>
<p>Description:</p> <ul style="list-style-type: none"> - Procariontes domains: Bacteria and Arcaea - The protists and the emergence of Eukaryotes - The biology and diversity of fungi - The form of animal life: bogy plans and diversity <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: Theoretical lessons Activity 2: Field assessment tests Activity 3: Assessment and non-attendance tests Activity 4: Practices of biology laboratory Activity 7: Preparation of subjects in virtual classroom 	

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Planning of activities

ACTIVITY 1. THEORY LESSONS	Hours: 80h Theory classes: 40h Self study: 40h
<p>Description:</p> <p>The content of the subject is organized in 4 thematic blocks, with multimedia support and facilitating the participation of students during the duration of the sessions (1 or 2 hours)</p>	
ACTIVITY 2. INDIVIDUAL TESTS	Hours: 8h Laboratory classes: 4h Theory classes: 4h
<p>Description:</p> <p>A block theory test (4) and two of the activities in the biology and computer lab workshop are carried out. At the end of the rest of the activities there is a final exam. Failure to pass this final exam gives the option to complete a new final exam.</p> <p>The tests are individual and are carried out in the computer room with the support of the evaluation system integrated in the Atenea intranet (Moodle).</p>	
ACTIVITY 3: NON-ATTENDANCE ASSESSMENT AND MONITORING TESTS	Hours: 8h Self study: 8h
<p>Description:</p> <p>Periodic (weekly) completion on line evaluation tests. The evaluation system integrated in the Atenea intranet (Moodle) is used. The tests will consist of questionnaires of a few questions similar to those that will be carried out in face-to-face tests.</p>	
ACTIVITY 4: BIOLOGY LABORATORY PRACTICES	Hours: 112h Laboratory classes: 6h Self study: 106h
<p>Description:</p> <p>At the Atenea intranet (Moodle), the practical guideline for the contents of the 8 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. At the end of each session, a questionnaire is opened on the intranet about the activity carried out (activity 3). The thematic of the practices is related and synchronized to thematic blocks of theory (activity 1)</p>	
ACTIVITY 5: COMPUTER CLASSROOM PRACTICES	Hours: 2h 50m Laboratory classes: 2h Self study: 0h 50m
<p>Description:</p> <p>Study of the transmission of monogenetic characters with the help of a computer with spreadsheet software.</p>	

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ACTIVITY 6. LIBRARY ACTIVITY	Hours: 3h Theory classes: 2h Self study: 1h
<p>Description:</p> <ul style="list-style-type: none"> - Session to learn about the campus library services - Search of bibliographic material related to the subject - Assessment of the activity (Activities 2 and 3) 	
ACTIVITY 7. SUBJECT TOPICS ON VIRTUAL CLASSROOM	Hours: 30h Self study: 30h
<p>Description:</p> <p>In the virtual classroom there is material available for monitoring the activities of the subject:</p> <ul style="list-style-type: none"> -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. 	

Qualification system

There will be an evaluation at the end of each unit or content.
The tests include concepts studied in theory (80%) and practices (20%)

N1: theory note= weighted average TB1, TB2, TB3, TB4

N2: $0.5 * \text{Note practices} + 0.5 * \text{TP1} + 0.5 * \text{TP2}$

CG: Generic Competition note

$N_{\text{final}} = 0.80 (0.8N1 + 0.2N2)$

The note of each block (TB1, TB2, TB3, TB4) corresponds to the note of each test block (Q1, Q2, Q3 and Q4) 90% and the note of the activities through intranet, 10%. The note of two blocks of practices (TP1, TP2) corresponds to the note of each block (PQ1 and PQ2) 80%, the note of the activities through the intranet, 10%, and the assessment made by professor of good practice in the laboratory, 10%.

Any note in a block less than 5, can be recovered in the final exam. If the weighted average is less than 5, the final exam will correspond to the entire contents of the course.

In case of failing the course, tests Q1, Q2, Q3, Q4 can be reassessed whenever the overall grade for the course is higher than NP.

Regulations for carrying out activities

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Bibliography

Basic:

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Complementary:

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Madigan, Michael T.; Martinko, John M.; Parker, Jack. *Brock biología de los microorganismos*. 10ª ed. Madrid [etc.]: Prentice Hall, 2004. ISBN 8420536792.

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