**820021 - BB - Biology**

**Coordinating unit:** 295 - EEBE - Barcelona East School of Engineering  
**Teaching unit:** 745 - DEAB - Department of Agri-Food Engineering and Biotechnology  
**Academic year:** 2019  
**Degree:** BACHELOR’S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)  
**ECTS credits:** 6  
**Teaching languages:** Catalan

### Degree competences to which the subject contributes

#### Specific:

2. Understand physiology and biology.  

CEBIO-200. Identify the functions of the human organism as a whole and by systems.

#### Transversal:

1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.

### Teaching methodology

The course uses expository methodology (theory) in 29%, individual or group classroom (lab) in 10%, individual distance in a 47% non-attendance and work in another group 14 %.

### Learning objectives of the subject

To provide students an overview of aspects of normal cell function to be able to understand the basics of integrating cells into tissues and their functional specialization, and also diseases at the molecular and cellular level.

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 45h</th>
<th>30.00%</th>
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<tbody>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
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<tr>
<td>Hours small group:</td>
<td>15h</td>
<td>10.00%</td>
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<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
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### Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time: 5h 30m</th>
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<tbody>
<tr>
<td><strong>1. - An evolutionary framework for Biology</strong></td>
<td></td>
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<tr>
<td>Description: Organisms have changed over hundreds of years, Evolutionary mechanisms. Speciation that has led to diversity</td>
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<thead>
<tr>
<th>Topic</th>
<th>Learning time: 5h 30m</th>
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<tbody>
<tr>
<td><strong>2. - Introduction to molecular and cellular biology</strong></td>
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<tr>
<td>Description: Water properties, relation of life with water, acids, bases, pH, blocked cellular ion balance.</td>
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<tr>
<th>Topic</th>
<th>Learning time: 9h</th>
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<tr>
<td><strong>3. - Macromolecules: Their chemistry and biology</strong></td>
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<tr>
<td>Description: Condensation reactions: Proteins: polymers of amino acids, carbohydrates, polymers of sugars, nucleic acids: polymers, lipids, water-insoluble molecules</td>
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<th>Topic</th>
<th>Learning time: 9h</th>
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<tbody>
<tr>
<td><strong>4. - Cell Organization</strong></td>
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<tr>
<td>Description: The Cell: basic unit of life, Prokaryotes, Eukaryotes. Information processing organelles that process energy, cytoskeleton, extracellular structures.</td>
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<th>Topic</th>
<th>Learning time: 7h 30m</th>
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<tr>
<td><strong>5. - Cell membranes</strong></td>
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<tr>
<td>Description:</td>
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</table>
6. - Energy and metabolic enzymes

Learning time: 12h
Theory classes: 3h
Laboratory classes: 2h
Self study: 7h

7. - Cellular pathways that produce chemical energy

Learning time: 14h
Theory classes: 3h
Laboratory classes: 2h
Self study: 9h

8. - Chromosomes, cell cycle and cell division

Learning time: 11h
Theory classes: 3h
Laboratory classes: 2h
Self study: 6h

9. - Genetics: Mendel's Laws

Learning time: 9h 30m
Theory classes: 1h 30m
Practical classes: 2h
Self study: 6h

10. - The DNA and its role in heredity

Learning time: 11h
Theory classes: 3h
Laboratory classes: 2h
Self study: 6h

11. - Of the DNA to Protein: Genotype to phenotype

Learning time: 11h
Theory classes: 3h
Laboratory classes: 2h
Self study: 6h
The evaluation will be conducted through the assessment by teachers of student work, individual and / or group performed on a face and, appropriately weighting the following activities:
2 individual tests conducted face-off along the course.
guided laboratory exercises.

Weight in the final evaluation:
Two partial checks: 35% + 35%
Working range: 25%
Generic skills: Effective oral and written communication: 5%

Qualification system
Bibliography

Basic:

