COURSE: CELL BIOLOGY AND GENETICS

SUBJECT MATTER: Biology
MODULE: Basic
PROGRAM: Degree in Biotechnology

GENERAL FEATURES *
Type: ☑Basic training, ☐Compulsory, ☐Elective
☐Final Degree Project, ☐Practicum
Duration: Semester / s: 1
Number of ECTS credits: 6
Language / s: Spanish, Catalan

SHORT DESCRIPTION AND JUSTIFICATION (of the meaning of the course in relation to the studies. Between 100 and 200 words)

The aim of the course is to acquire general knowledge of Biology, as this is essential for any experimental science student, as it help to understand everything about the life on our planet. Furthermore, Biology is closely related to chemistry, since the cells are composed of chemical molecules and therefore, biological systems respond to the laws of chemistry.

The course includes the following essential contents: Concept of life. The cell as the fundamental unit of life. Evolution and biodiversity. Ecology. The biology laboratory. Manipulation of biological samples.

COMPETENCES (of the course placed in relation to the pre-assigned competences in the subject matter)

- That students demonstrate knowledge in the area of study, which is mostly constructed on the grounds of the general secondary education (high school). Even though this knowledge is usually at the level of advanced textbooks, it also includes some of the corresponding state-of-the-art (CB1).
- That students have the ability to gather and interpret relevant data (normally within their area of study) to think over and make judgments on relevant social, scientific or ethical issues (CB3).
- Be able to understand and apply basic knowledge of Mathematics, Chemistry, Physics and Biology to the field of Biotechnology (E1).

PREVIOUS REQUIREMENTS * (modules, subject matters, courses or knowledge necessary for the follow-up of the subject. State previous courses required to be completed)

The competencies of the earlier stages of education.

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CONTENTS (List the content of the course, with up to two level detail)

UNIT 1: INTRODUCTION
Alive or not alive? The cell. Distinctives of cellular life. Unity and diversity of cells.

UNIT 2: PROKARYOTIC CELL
The prokaryotic cell: bacteria and archaea. The bacterial endospore.

UNIT 3: EUKARYOTIC CELL

UNIT 4: GENETICS

UNIT 5: EVOLUTION AND BIODIVERSITY

UNIT 6: ECOLOGY

UNIT 7: BIOSANITARY LABORATORIES
Facilities. Safe manipulation of biological samples.

METHODOLOGY

LEARNING ACTIVITIES * (Complete the table relating activities, workload in ECTS credits, and competences.)

<table>
<thead>
<tr>
<th>Learning Activities</th>
<th>ECTS Credits</th>
<th>Competences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>1,3</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Case and Problem-Solving Sessions</td>
<td>0,2</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Seminars</td>
<td>0,1</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Practical and Lab Work</td>
<td>-</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Presentations</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Personal Study</td>
<td>4,3</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Assessment Tasks (Exams, Continuous Assessment…)</td>
<td>0,1</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6</td>
<td>CB1, CB3, E1</td>
</tr>
</tbody>
</table>

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TEACHING METHODOLOGY (justify the teaching methodology in relation to the competences and course contents. Between 100 and 200 words)

- Lectures - Presentation and explanation of contents by a teacher (possibly including demonstrations).
- Case and Problem-Solving Sessions - Resolution of exercises and problems, and exposition / discussion of cases by a teacher with the active participation of students.
- Seminars - Period of instruction carried out by a teacher with the aim of reviewing, discussing and resolving doubts about the materials and topics presented in the lectures and in the case and problem-solving sessions.
- Personal study activities - Personal work of the student necessary to acquire the competences of each subject matter, and to assimilate the knowledge exposed in lectures and case and problem-solving sessions, using the recommended reference materials. They also include the preparation of tasks related to the other activities, and the preparation of exams.
- Assessment Tasks - Oral and / or written tests made during the academic period of a course, or once it has finished (final exams, follow-up controls).

ASSESSMENT

ASSESSMENT METHODS * (Complete the table relating assessment methods, competences, and weight percentage in the course qualification)

<table>
<thead>
<tr>
<th>Assessment methods</th>
<th>Weight</th>
<th>Competences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>50%</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Midterm Exam/s</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Continuous Assessment Activities</td>
<td>40%</td>
<td>CB1, CB3, E1</td>
</tr>
<tr>
<td>Reports and Presentations</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lab or Field Work</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Projects</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Host Student Evaluation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Participation</td>
<td>10%</td>
<td>CB1, CB3, E1</td>
</tr>
</tbody>
</table>

LEARNING OUTCOMES (Explanation of the student's achievements that allow the assessment of competences, relating them to the competences and the assessment methods)

- The student must demonstrate having and understanding the knowledge of cell structure and the cell cycle (CB1, CB3, E1).
- The student must demonstrate having and understanding the basis of genetics (CB1, CB3, E1).
- The student must demonstrate having and understanding the basis of evolution (CB1, CB3, E1).
- The student must demonstrate having and understanding the knowledge of the basis of ecology (CB1, CB3, E1).

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QUALIFICATION (Explanation of the qualification system)

In the first call, the evaluation of the subject will consider the marks of Continuous Assessment Activities (AA), Participation (P) and of the final exam (EF). Thus, the grade of the subject will be obtained from:

- Assessment Activities (AA), which consist of:
  - One individual test (IT) (this activity lasts 1 hour and it is reflected in the academic calendar).
- Participation during the class sessions.
- One Final Exam (FE) (It includes all the material and lasts 2 hours).

The Final Mark (FM) is calculated as follows:

$$ FM = 0.4 \cdot AA + 0.1 \cdot P + 0.5 \cdot FE $$

In order to pass the subject, the final exam (FE) mark must be greater than or equal to 5.

Note that the final approval of the course corresponds to 5. If the final exam mark is lower than the minimum grade, the final mark will be the grade of this exam.

The evaluation of the subject in calls different from the first one, will consider only the final exam mark (FE) and the Participation (P) grade.

$$ FM \ (other \ calls) = 0.1 \cdot P + 0.9 \cdot FE $$

ASSESSMENT OF THE COMPETENCES (Describe the grading system for each competence in relation with the assessment tasks)

For the evaluation of the CB1, CB3 and E1 competences, the indicator used will be the final mark of the subject.

BIBLIOGRAPHY (Recommended and accessible to the student.)

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