PERSONA CIÈNCIA EMPRESA
UNIVERSITAT RAMON LLULL

COURSE: BIOLOGY

SUBJECT MATTER: Biology
MODULE: Basic Formation
PROGRAM: Degree in Chemical Engineering

GENERAL FEATURES *

Type: ☑ Basic Formation, ☐ Compulsory, ☐ Optional

☐ Final Degree Project, ☐ Practicum

Duration: Semestral **Semestre / s**: 1
Number of ECTS credits: 6
Language / s: Spanish, Catalan

DESCRIPTION

SHORT DESCRIPTION AND JUSTIFICATION

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

- Be able to understand and apply basic knowledge of Mathematics, Chemistry, Physics, Computer Science, Economics, Graphic Expression and Biology for application in the field of Chemical Engineering. (→E1, CB1)
- To be able to understand and apply knowledge of Chemistry and Engineering for its application in the field of Chemical Engineering. (→E7, CB2)
- Ability to understand and apply the basic knowledge principles of biology and its applications in chemical engineering. (→FB7)

PREVIOUS REQUIREMENTS

According to the program planning and academic regulations.

CONTENTS

UNIT 1: INTRODUCCTION
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
The eukaryotic cell: protozoa, algae, fungi, animal cell and plant cell. The cell cycle. Mitosis. Meiosis.

UNIT 4: GENETICS
Mendel and the idea of the gene. Chromosomal and molecular basis of heredity. Genetics of cellular organelles. Gene to protein. Virus and virus genetics. Bacterial genetics. Asexual reproduction. Sexual reproduction.

UNIT 5: EVOLUTIONAND BIODIVERSITY
Mechanisms of evolution. Species concept. Phylogeny and systematics. The tree of life. Introduction to biodiversity. Prokaryotes. Protists. Plant diversity. Fungi. Animal diversity.

UNIT 6: ECOLOGY
Fundamental concepts. Behavioral ecology. Population Ecology. Community ecology. Ecosystems.

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

METHODOLOGY

LEARNING ACTIVITIES

Learning Activities	Hours	ECTS Credits	Competences
Lectures	38	1,4	E1, CB1, FB7
Case and Problem-Solving Sessions	3	0,1	E1, CB1, E7, CB2, FB7
Seminars	3	0,1	E1, CB1, E7, CB2, FB7
Practical and Lab Work	-	-	-
Presentations	-	-	-
Personal Study	116	4,3	E1, CB1, E7, CB2, FB7
Assessment Tasks (Exams, Continuous Assessment...)	3	0,1	E1, CB1, E7, CB2, FB7
TOTAL	**162**	**6,0**	E1, CB1, E7, CB2, FB7

TEACHING METHODOLOGY

- Lectures - Presentation and explanation of contents by a professor (possibly including demonstrations).
- Case and Problem-Solving Sessions - Resolution of exercises and problems, and exposition / discussion of cases by a professor with the active participation of students.
- Seminars - Period of instruction carried out by a professor 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

Assessment methods	Weight	Competences
Final Exam	50%	E1, CB1, E7, CB2, FB7
Midterm Exam/s	-	-
Continuous Assessment Activities	-	-
Reports and Presentations	50%	E1, CB1, E7, CB2, FB7
Lab or Field Work	-	-
Projects	-	-
Host Student Evaluation	-	-
Participation	-	-

LEARNING OUTCOMES

- Those students have demonstrated that they possess and understand knowledge in an area of study that is based on general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study. (→ E1, CB1)
- The student must demonstrate ability to apply properly the vocabulary of Biology. (→ E1, CB1)
- Those students know how to apply their knowledge to their work or vocation in a professional manner and possess the competences that are usually demonstrated through the elaboration and defence of arguments and the resolution of problems within their area of study. (→ E7, CB2, FB7)

QUALIFICATION

In the first call, the evaluation of the subject will consider the marks of the Reports and Presentations (RP) and of the final exam (EF). Thus, the grade of the subject will be obtained from:

- Reports and presentation notes (TP), which consist of:
  - One individual test (IT) (this activity lasts 1 hour and it is reflected in the academic calendar).
  - Two exercises (EX) (follow-up activities carried out during class time, without prior notice).
- One Final Exam (FE) (It includes all the material and lasts 2 hours).

The Final Mark (FM) is calculated as follows:

FM = 0.25 * IT + 0.25 * average EX + 0.5 * 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). That is, the grade of the subject corresponds to the mark obtained in the final exam of that call.

ASSESSMENT OF THE COMPETENCES

For the evaluation of the E1 / CB1 competence, the exam grade will be used as an indicator. For the evaluation of the E7 / CB2 and FB7 competences, the indicator used will be the final grade of the subject.

BIBLIOGRAPHY

Biología. 3ª Edición. Scott Freeman, Pearson Educación. 2009.

DOCUMENT HISTORY

PREVIOUS REVISIONS

CURRENT REVISION
February 25th 2019, Dr. Montserrat Agut Bonsfills