

Chemistry

Code: 101957
ECTS Credits: 6

Degree	Type	Year	Semester
2500890 Genetics	FB	1	1

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Lorena Roldán Martín

Prerequisites

Although no official prerequisites are mandatory, it is highly recommended to have coursed the subjects of Chemistry, Physics and Biology in the High School.

As far as the lab sessions are concerned, students have the obligation to pass the tests of security and biosecurity available in Campus Virtual, as well as to read and accept the standard operating rules of the laboratories of the Faculty of Biosciences

Objectives and Contextualisation

- 1) To acquire a fundamental chemical language.
- 2) To recognize different chemical bonds (covalent, ionic and metallic) and to derive structural properties from them.
- 3) To recognize the different existing intermolecular forces and to derive physico-chemical properties
- 4) To assimilate the concept of chemical balance, and its application in different chemical reactions.
- 5) To know differentiating chemical reaction types: acid-base, complexation, redox, and organic chemistry.
- 6) To know how to manipulate properly materials and products in a chemical laboratory

Competences

- Apply scientific method to problem solving.
- Appreciate the importance of quality and a job well done.
- Be able to analyse and synthesise.

- Know and understand the underlying chemical basics of the molecular properties of genetic and biological processes in general.
- Reason critically.

Learning Outcomes

1. Apply scientific method to problem solving.
2. Apply the basic concepts of chemistry to the reactions of biological systems.
3. Appreciate the importance of quality and a job well done.
4. Be able to analyse and synthesise.
5. Define the basic concepts of chemistry.
6. Reason critically.

Content

Atomic Structure

Chemical bond

Acid-Base reactions and complexation

Redox reactions

Organic Chemistry

Methodology

The subject will be developed by means of three directed activities. Each one is associated with a personal work carried out by the student, with the aim to: i) prepare the examans of the subject, and ii) be ready for the problems and lab sessions.

Directed activities:

Master classes

Master classes will be directed activities devoted to expose the fundamental competences of the subject. Ideally, the procedure is not based on the full exposition from the professor to the students, but on the establishment of interactive dynamics between the professor and the students.

Problems sessions

These are the sessions devoted to apply the competences learnt in the master classes in front of hypothetical situations. To foster the interaction between the professor and the students, these sessions will be done in reduced groups. A set of problems will be solved with the aim to get a better and deeper knowledge of the master class competences.

Laboratory sessions

Two lab sessions will be done with reduced groups. In these sessions, students will apply in a practical way some of the competences given in the master classes and problem sessions. In the end of each session, compilation of a questionnaire (which can be filled presentially or on-line, depending on the healthy recomendations) will be mandatory as evaluation assessment of the practice. To carry out the lab sessions, students have the obligation to pass the tests of security and biosecurity available in Campus Virtual, as well as to read and accept the standard operating rules of the laboratories of the Faculty of Biosciences.

Personal work:

One part is related to the study and preparation of the exams of the subject.

The other part is related to the preparation of the problem and lab sessions. As far as the problem sessions is concerned, students have to attend the class with the problems tentatively solved, while with respect to the lab sessions with the guidelines of the practices read.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Laboratory sessions	8	0.32	1, 2, 6, 4, 3
Master classes	30	1.2	1, 5, 6, 4, 3
Problem sessions	13	0.52	1, 2, 6, 4, 3
Type: Supervised			
Form supervision	3	0.12	1, 2, 5, 6, 3
Preparing lab sessions	1	0.04	6, 4, 3
Type: Autonomous			
Forms	20	0.8	2, 6, 4, 3
Preparing and solving exercises	20	0.8	1, 2, 6, 3
Studying	46	1.84	5, 6, 4, 3

Assessment

The final grade is based on the ponderation of three types of evaluation: partial examination, laboratory practices, and continuous evaluation.

Partial examination:

This part consists of the partial exams. There will be two: one in the half of the course, the other in the end. This part weights 80% of the final grade. Obtaining less than 4 out of 10 in one of the partial exam (or the both) will imply to attend a second-chance exam of that partial (or the both). Obtaining less than 5 out of 10 in the average of the two partial exams will imply to attend the second-chance exam. The part to recover will depend on the qualification of each partial and the professor will do a case-by-case assessment.

Evaluation of the laboratory sessions:

This part will evaluate the work carried out by the students in the laboratory sessions by assessing the acquired knowledge, the previous preparation and the work habits in the laboratory. The evaluation will be done by filling a questionnaire related to the practice done. This part weights 10% of the final grade. The non-justified absence in just one of the sessions or obtaining a grade less than 4 out of 10 of this part will mean not to pass the subject course.

Continuous evaluation:

Along the course, students will have to do activities (works, evidences, solving problems, etc.) which will be evaluated. This part weights 10% of the final grade.

The student will pass the subject if the weighted average overcomes the grade of 5 (out of 10) according to the following expression:

Final grade = (partial examination grade)x0.40 + (lab sessions grade)x0.10 + (continuous evaluation grade)x0.10

In the case no to reach the grade of 5, student will have the opportunity to attend the second-chance exam.

Justified absence to the evaluation actions:

Students who are not able to attend in any of the evaluation actions (namely, oral exposition and lab sessions) in a justified way (namely, illness, death of relative, crash) and by providing an official document as a justification, will have the right to do the missing evaluation in another date.

Non-assessing students and retake processing:

Those students who do not attend of any of the evaluation actions in a non-justified way will be considered as non-assessing students and will not pass the subject.

To be eligible for the retake process, the student should have been previously evaluated in a set of activities equaling at least two thirds of the final score of the course or module. Thus, the student will be graded as "No Avaluable" if the weightin of all conducted evaluation activities is less than 67% of the final score

Repeating students:

The repeating students who have a grade of > 5 in the lab sessions, this grade is kept and do not have to repeat the practices. However, they will have to attend the rest of evaluation actions

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Lab Session Evaluation	10%	1	0.04	1, 2, 5, 6, 4, 3
Partial examination	80%	6	0.24	1, 2, 5, 6, 4
continuous evaluation	10%	2	0.08	1, 2, 5, 6, 4, 3

Bibliography

- R. H. Petrucci, W. S. Hardwood, F. G. Herring, *Química General* 10a Edició Prentice Hall, 2011.
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- P. Atkins, L. Jones *Principios de Química Los caminos del descubrimiento* 5ª Edició., Editorial médica Panamericana 2010.

Software

There is no software for this subject.

