Course guide
295031 - QQ - Chemistry

Last modified: 04/06/2026

Unit in charge: Barcelona East School of Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering.
470 - CRCEMB - Centre de Recerca en Ciència i Enginyeria Multiescala de Barcelona.

Degree: BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2026 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: ELAINE APARECIDA ARMELIN DIGGROC - DAVID ZANUY GOMARA

Others:

Primer quadrimestre:
SONIA LANZALACO - Grup: T2
JUAN TORRAS COSTA - Grup: T2
DAVID ZANUY GOMARA - Grup: M2

Segon quadrimestre:
ELAINE APARECIDA ARMELIN DIGGROC - Grup: M2
MARIA DEL MAR PÉREZ MADRIGAL - Grup: M2

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEB-04. Understand the fundamental principles of general, organic and inorganic chemistry and apply them in engineering.

TEACHING METHODOLOGY

Lectures:
The lectures (lectures or participatory lectures) will be used to introduce theoretical knowledge and will be combined with directed activities to solve individual or group problems; and laboratory practice sessions related to some topics present in the syllabi of this class.

Lectures will be structured in sessions of 2h per week.

On-site classes will gradually introduce some concepts of active learning and cooperative learning in order to achieve the specific objectives of the class and develop their learning skills.

The resolution of exercises and problems refer to the resolution of numerical problems related to the contents, as well as questions about concepts or examples of the syllabus of the class. Teachers will propose directed activities, in the form of individual or group work, which may be qualified or not according to the type of material to be delivered (problem solving, exercises resolution, monographic works, questionnaires type QUIC-Questionnaire Of Critical Incidents, among others).

The laboratory practical sessions are directed activities of 2h of duration and will be realized in small groups (between 10 and 30 students). Students will be distributed in pairs or groups of 3-4 people to optimize the use of available resources and to encourage student - student and student - teacher interaction. The practices are related to the contents of the class and are intended to familiarize the student with some basic concepts of the subject. Internships are compulsory and will be graded according to the delivery of short-term reports or tests at the end of each session.

Non-presential dedication:
Teachers will propose autonomous learning activities in the form of individual or group work at the end of each face-to-face session or through the use of the ATENEA virtual campus. The hours of non-presential dedication in the subject are distributed according to the degree of difficulty of each syllabus and are detailed in the "Contents" section of the teaching file.

Virtual Campus ATENEA:
Students should check the ATENEA virtual campus regularly for programmed targeted activities, test and practice dates, and to consult instructional materials on theory, problems or practices available for self-directed or directed learning.
Students should attend lecture sessions with the necessary teaching material to follow the course (slides, problem notebook, practice scripts, calculator, among others). Otherwise, the teacher has the power to act given the situation of requirement of the agenda.

LEARNING OBJECTIVES OF THE SUBJECT

To provide students of Chemical Engineering with an introduction to the basic principles of General Chemistry, Inorganic Chemistry and Organic Chemistry necessary for successfully following the next subjects related to different areas of Engineering. To apply the basic knowledge acquired to understand the properties and applications of the main compounds of interest in Engineering.

STUDY LOAD

Type	Hours	Percentage
Hours large group	52,5	35.00
Self study	90,0	60.00
Hours small group	7,5	5.00

Total learning time: 150 h

CONTENTS

title english

Description:
content english

Full-or-part-time: 13h
Theory classes: 6h
Guided activities: 1h
Self study : 6h

title english

Description:
content english

Full-or-part-time: 33h
Theory classes: 14h
Guided activities: 2h
Self study : 17h

title english

Description:
content english

Full-or-part-time: 19h
Theory classes: 8h
Guided activities: 2h
Self study : 9h

title english

Description:
content english

Full-or-part-time: 9h 30m
Theory classes: 4h
Guided activities: 1h
Self study : 4h 30m

title english

Description:
content english

Full-or-part-time: 30h 30m
Theory classes: 12h
Guided activities: 1h 30m
Self study : 17h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the **Action Framework for Academic Integrity in Assessment at the UPC**.

Type of Evaluation: Continuous evaluation

The subject has four different evaluation elements distributed throughout the semester:

The continuous final grade (Nfp) will be calculated according to the following polynomial:
Final exam (Fe) = 49%
Midterm exam I (mt1) = 17%
Midterm Exam II (mt2) = 17%
Continuous assessment (CA): Practice Grade (NP) + Class Exercises (At discretion) = 17%

Continuous final grade (FGp): 0.49 fe + 0.17 mt1 + 0.17 mt2 + 0.17 CA

The final grade of the subject will be calculated as the maximum between FGp and Fe

THERE WILL BE NO REPEAT ASSESSMENT EXAM

Practical: it will have 2 components:
50% of the grade will correspond to the activity delivered after the session (group)
50% of the grade will correspond to the individual activity delivered before the end of the course.

FAILURE TO CARRY OUT THE INTERNSHIP IMPLIES TO FAIL THE COURSE.

BIBLIOGRAPHY

Basic:
- Petrucci, Ralph H.; Harwood, William S.; Herrin, F. Geoffrey. Química general. 8a ed. Madrid [etc.]: Prentice Hall, 2003. ISBN 9788420537825.
- Atkins, Peter; Jones, Loretta; Laverman, Leroy. Chemical principles : the quest for insight. 7th ed. New York: W. H. Freeman, 2016. ISBN 9781464183959.
- Wade, L. G. Química orgánica. 9a ed. México: Pearson Educación, 2016. ISBN 9786073238472.
- Morrison, Robert Thornton.; Boyd, Robert Neilson. Química orgánica. 5ª ed. Buenos Aires: Addison-Wesley Iberoamericana, 1990. ISBN 0201629321.

Complementary:
- Casanovas Salas, Jordi; Alemán, Carlos. Introducción a la ciencia de los materiales. Barcelona: Calamo, 2002. ISBN 8495860112.
- Brown, T.L.; Le May, H.E.; Bursten, B.E. Química : la ciencia central [on line]. 12ª ed. México: Pearson Educación, 2014 [Consultation: 04/03/2021]. Available on: http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1288. ISBN 9786073222372.
- Casabó Gispert, Jaume. Estructura atómica y enlace químico. Barcelona: Reverté, 1996. ISBN 8429171894.
- Mó Romero, Otilia; Yáñez Montero, Manuel. Enlace químico y estructura molecular. 2ª ed. Barcelona: Cálamo, 2002. ISBN 8495860120.