

COURSE GUIDE

2025/26

Faculty215 - Faculty of Chemistry

Cycle.

DegreeGQUIMI20 - Bachelor's Degree in Chemistry

YearFourth year

COURSE

26139 - Environmental Technology & Chemistry

Credits, ECTS:6

COURSE DESCRIPTION

In this subject the student must apply his knowledge of Chemistry to the understanding of the environment, its processes and the fate and effects of chemical compound releases. In addition, the student will employ Chemical Engineering principles for the selection and design of waste treatment plants.

COMPETENCIES/LEARNING RESULTS FOR THE SUBJECT

The competences the student must acquire are:

M03CM08 - Know how to integrate their knowledge of chemistry and chemical engineering to evaluate the impact and evolution of pollutants in the environment and implement the different means of purification.

M03CM12 - Possess knowledge of the network tools and services that enable searches for information in the field of chemistry and similar fields.

M03CM13 - Transmit phenomena and processes related to chemistry and similar fields in verbal presentations and/or written reports and in a comprehensible way in either of the two official languages of the Autonomous Community of the Basque Country or in English.

M03CM17 - Demonstrate observation, analysis and synthesis skills with a capacity for criticism and self-criticism.

M03CM18 - Demonstrate a capacity for learning and for autonomous work for professional development.

M03CM19 - Be able to manage, organise and plan chemical processes, applying criteria of quality and environmental conservation.

M03CM20 - Relate chemistry with other disciplines and understand its impact on the industrial and technological society and the importance of the industrial chemical sector.

At the end of the course, the student is expected to be able to:

- Explain the characteristics of the environment and environmental processes using chemical arguments.
- Analyze environmental quality data
- Describe the evolution and effects of pollutants in the environment
- Reason and suggest treatment systems for waste streams.

Theoretical and Practical Contents

I/Natural Environment.

II/Atmosphere

III/ Hydrosphere

IV/Waste Water treatment.

III/Soil and soil pollution.

TEACHING METHODS

The subject includes on-site classes with the teacher and seminars where the student must

- a) solve and discuss environmental problems
- b) prepare and make a presentation on a subject related with the environment.

TYPES OF TEACHING

Types of teaching	M	S	GA	GL	GO	GCL	TA	TI	GCA
Hours of face-to-face teaching	40	10	10						
Horas de Actividad No Presencial del Alumno/a	60	15	15						

Legend: M: Lecture-basedS: SeminarGA: Applied classroom-based groupsGL: Applied laboratory-based groupsGO: Applied computer-based groupsGCL: Applied clinical-based groupsTA: WorkshopTI: Industrial workshopGCA: Applied fieldwork groups

Evaluation methods

- Continuous evaluation
- End-of-course evaluation

Evaluation tools and percentages of final mark



- Written test, open questions 60%
- Oral defence 15%
- Individual assignments 15%
- Oral presentation of assigned tasks, Reading 10%

ORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

- Continuous evaluation system (Practical activities plus written test)
- Final evaluation

Evaluation guidelines:

- * Written exam: 60%
- * Debate: 10%
 - * Presentation 15%
 - * Solving and discussing environmental problems 15%

Students have the right to be evaluated through the final evaluation system (single test), regardless of whether or not they have participated in the continuous assessment system. To do this, students must submit, within a period of 9 weeks from the beginning of the course, a letter to the teacher responsible for the subject, declining the continuous assessment. It will be enough for the student not to take the exam to be evaluated as "not presented".

EXTRAORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

Written exam: 100%

It will be enough for the student not to take the exam to be evaluated as "not presented".

MANDATORY MATERIALS

No hay material obligatorio

BIBLIOGRAPHY

Basic bibliography

Xavier Domènech Antúnez ¿Fundamentos de la química ambiental. Volumen I¿ Editorial Síntesis, 2014 (Madrid)
Metcalf-Eddy: "Ingeniería de aguas residuales". McGraw-Hill, 1998 (Barcelona)
C. Orozco y cols. "Contaminación ambiental". Thompson, 2003 (Madrid).
J.H. Seinfeld y S.N. Pandis: "Atmospheric Chemistry and Physics". J. Wiley, 2006 (Nueva York).

Detailed bibliography

J.E. Figueruelo y M.N. Dávila: "Química Física del ambiente y de los procesos naturales". Ed. Reverte (Madrid, 2000).
D.L. Sparks: "Environmental Chemistry of Soils". Academic Press, 2003.
Davis, W.T. (Ed.): "Air Pollution Engineering Manual", 2nd Edition, John Wiley and Sons, 2000.

Journals

Environmental Science and Technology
Environmental Science: Advances
COMMUNICATIONS EARTH & ENVIRONMENT
Nature Climate Change
One Earth

Web sites of interest

<https://climate.nasa.gov/>
<https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts>

OBSERVATIONS