

## COURSE GUIDE

2021/22

**Faculty** 215 - Faculty of Chemistry

**Cycle** Not Applicable

**Degree** GQUIMI20 - Bachelor's Degree in Chemistry

**Year** Fourth 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.

## CONTENIDOS TEÓRICO-PRÁCTICOS

I/Natural Environment: Atmosphere, Hydrosphere and Pedosphere

II/Environmental chemistry: Soil formation and properties. Continental and marine waters. Atmospheric chemistry

III/Soil and water pollution. Atmospheric pollution.

IV/Waste treatment: Water treatment. Soil recuperation. Gas streams treatment.

## TEACHING METHODS

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

- a) solve and discuss problems on pollutant dispersion
- 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-based

S: Seminar

GA: Applied classroom-based groups

GL: Applied laboratory-based groups

GO: Applied computer-based groups

GCL: Applied clinical-based groups

TA: Workshop

TI: Industrial workshop

GCA: Applied fieldwork groups

## Evaluation methods

- Continuous evaluation
- End-of-course evaluation

## Evaluation tools and percentages of final mark

- Written test, open questions 60%
- Individual assignments 20%

- Teamwork assignments (problem solving, Project design) 20%

#### **ORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT**

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

Evaluation guidelines:

- \* Written test: 80%
- \* Other activities: 20%

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**

Se indicará cada curso en la Guía Docente.

#### **BIBLIOGRAFÍA**

##### **Basic bibliography**

- 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**

Journals of Environmental Chemistry and Technology.

##### **Web sites of interest**

<http://www.euskadi.eus/temas/-/medio-ambiente-y-meteorologia/>

#### **OBSERVATIONS**