

Degree programme	Type	Course
Chemical Engineering	OP	4

Contact lecturer

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Teaching staff

Esther Molina Peñate

Teresa Gea Leiva

Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

It is recommended that the course Enginyeria del Medi Ambient has been passed.

Objectives

This subject corresponds to the continuation of the Environmental Technology subject focused on solid organic waste, with a focus on the design and study of facilities with special emphasis on biological treatments (composting, anaerobic digestion, etc.), study of real installations and practical cases.

Knowledge to acquire:

- General knowledge of the different types of solid waste and their associated problems
- List the hierarchy of waste treatment options in order
- Ability to interpret the properties associated with solid waste, especially its biodegradability and ways to measure it.
- Interpret the scientific foundations on which the biological processes of valorization of organic waste from composting and anaerobic digestion are based, and design of facilities
- Learn and compare different thermochemical waste treatment processes.
- Learn about the main waste treatment and recovery facilities
- Know the role of waste in the circular economy and the current trends in its valorisation

Learning outcomes

1. Apply matter and energy balance to typical continuous and discontinuous environmental engineering systems.

2. Apply chemical engineering to the prevention of environmental and energy problems in accordance with the principles of sustainable development and applied to the different production processes of the main inorganic and organic products in the different sectors of industrial chemistry.
3. Apply environmental management systems and tools.
4. Identify the applicable environmental legislation on a local, regional and global scale.
5. Propose a logical sequence of technologies applicable to the resolution of an environmental problem.
6. Develop scientific thinking.
7. Work autonomously.

Contents

Topic 1. Types and characteristics of organic waste

Topic 2. Biological treatments of waste

Topic 3. Thermochemical treatments of waste

Topic 4. Study of waste treatment and recovery facilities.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Independent work	21	0.84	
Personal study	25	1	
Theory class	20	0.8	
Classroom practices	5	0.2	

The teaching methodology of this subject combines different elements: lectures and seminars; problem-based learning; cooperative learning; case resolution.

Communication with students will take place via the Virtual Campus (Moodle).

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.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Exams	70%	4	0.16	1, 2, 5, 6, 7
Assessment activities in classroom	30%	0	0	1, 2, 3, 4, 5, 6, 7

The course consists of the following assessment activities:

- Exams (70%): Two exams will be held. Exam 1 (30% of the final grade) and covers Topics 1 and 2; Exam 2 (40% of the final grade) covers the complete syllabus. These exams will include both theoretical questions and practical exercises.
- Graded classroom activities (30%): This component of the grade cannot be retaken (it is non-recoverable). Individual tests and graded group exercises will be carried out during classroom sessions.

Non-participation in any of the assessment activities will be graded as a zero.

To pass the course through continuous assessment, students must obtain a minimum grade of 5 on each exam and an overall grade of at least 5 for the course. If this requirement is not met, the student may take a make-up exam.

Assessment Schedule:

At the beginning of the course, the schedule for in-class assessment activities will be announced.

Exams will take place according to the official exam calendar for the degree program.

Make-up Process:

The make-up process is only available to students who have not passed the course through continuous assessment.

Exams may be retaken with a synthesis make-up exam for the course.

The final grade calculation during the resit process will follow the same method as continuous assessment, applying the same minimum grade criteria.

In-class graded activities cannot be recovered.

Grade Review Procedure:

For each assessment activity, a time, date, and location will be provided for students to review their work with the instructor. In this context, students may file grade-related complaints, which will be evaluated by the instructor responsible for the course. If a student does not attend the review, the activity will not be reviewed later.

Grading:

Honors (MH): Awarding an "Matrícula d'Honor" is at the discretion of the course instructor. According to UAB regulations, MH can only be given to students who achieve a final grade of 9.00 or higher. A maximum of 5% of enrolled students may receive this distinction.

Students will be considered Not Assessable (NA) if they do not attend either the theory exam or the make-up exam.

Irregularities: Cheating and Plagiarism

Without prejudice to other disciplinary actions, any irregularities that could affect the grading of an assessment activity will be marked with a zero. This includes cheating, plagiarism, deception, allowing others to copy, etc., in any evaluation activity.

Assessment of Repeating Students

Students retaking the course will be assessed in the same way as the rest of the class.

RESTRICTED USE OF AI

Restricted use: For this course, the use of Artificial Intelligence (AI) technologies is allowed exclusively for tasks involving text correction or improvement, but not for content generation. Students must clearly indicate how they have used these technologies, specify the tools employed, and include a critical reflection on how these influenced both the process and the final outcome of the activity. Lack of transparency in the use of AI in assessable activities will be considered academic dishonesty and may result in partial or total penalties to the activity grade, or more serious sanctions in severe cases.

Bibliography

- Gestión integral de residuos sólidos. George Tchobanoglous, Hilary Theisen, Samuel A. Vigil. Editorial Mc Graw-Hill. 1994.
- The Practical Handbook of Compost Engineering. R. T. Haug. Editorial CRC Press. 1993. (Disponible document electrònic: <https://ebookcentral.proquest.com/lib/uab/detail.action?docID=5389526>)
- Handbook of Solid Waste Management and Waste Minimization Technologies. Cheremisinoff, Nicholas P. 200. Disponible en línea
- Composting: Fundamentals and recent advances. Sánchez A., Gea T., Font X., Artola A., Barrena R., Moral-Vico J. DOI: 10.1039/9781837673650 RSC Books. 2025.
- Agència de Residus de Catalunya, www.arc.cat
- Agència Europea del Medi Ambient, <https://www.eea.europa.eu/>

Software

No specific software required

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	21	Catalan	first semester	afternoon
(PAUL) Classroom practices	211	Catalan	first semester	morning-mixed