



Universidad de Jaén

School of Engineering of Jaén

Fundamentals of environmental technology

2024-2025

Grado en Ingeniería electrónica industrial (E.P.S. Jaén)

Doble Grado en Ingeniería mecánica e Ingeniería electrónica industrial (E.P.S. Jaén)



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Syllabus 2024-25 - 13112013 - Fundamentals of Environmental Technology (Fundamentos de tecnología medioambiental)

Caption

- Level 1: Tutorial support sessions, materials and exams in this language
- Level 2: Tutorial support sessions, materials, exams and seminars in this language
- Level 3: Tutorial support sessions, materials, exams, seminars and regular lectures in this language

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DEGREE: Grado en Ingeniería electrónica industrial (13112013)
FACULTY: SCHOOL OF ENGINEERING OF JAÉN
DEGREE: Doble Grado en Ingeniería mecánica e Ingeniería electrónica industrial (13912016)
FACULTY: SCHOOL OF ENGINEERING OF JAÉN
ACADEMIC YEAR: 2024-25
COURSE: Fundamentals of Environmental Technology

SYLLABUS

1. COURSE BASIC INFORMATION

NAME: Fundamentals of Environmental Technology
CODE: 13112013 (*) **ACADEMIC YEAR:** 2024-25
LANGUAGE: English **LEVEL:** 0
ECTS CREDITS: 3.0 **YEAR:** 3 **SEMESTER:** PC

2. LECTURER BASIC INFORMATION

NAME: GALAN MARTIN, ANGEL
DEPARTMENT: U122 - INGENIERÍA QUIM., AMBIENTAL Y DE LOS MAT.
FIELD OF STUDY: 790 - TECNOLOGÍAS DEL MEDIO AMBIENTE
OFFICE NO.: A3 - A-309 **E-MAIL:** galan@ujaen.es **P:** 953211860
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ORCID: -
LANGUAGE: - **LEVEL:** 2

3. CONTENT DESCRIPTION

Theory contents

Block I : Introduction to environmental technology. Major types of pollution. Main pollutants and industrial waste sources.

Block II : Wastewater pollution indicators. Technologies applied to urban and industrial wastewater treatment. Sewage sludge treatment.

Block III : Basic concepts of air pollution. Air pollution particle separation equipment. Technologies for gaseous pollutant purification.

Block IV : Physico-chemical techniques for remediation of contaminated soils. Thermal treatments. Bioremediation techniques.

Block V : Introduction to environmental management. Life cycle assessment methodologies. Environmental impact assessment.

Practice contents

Laboratory practices, computer laboratory on Life Cycle Assessment, thematic seminar and practical cases of environmental technologies.

4. COURSE DESCRIPTION AND TEACHING METHODOLOGY

Lecture notes (14h)

- Introductory activities (1h): Introduction to the course and brief description of laboratory practicals.
- Lecture (13h): explanation of the contents of the course.

With this activity, taught competencies are CEX10 and CB2R, and the learning outcome 64.

Problem-solving, exercises performed individually and/or small groups (14h)

- Laboratory practicals (4h): laboratory experiments on different topics of the course. Laboratory work in small teams (groups of 3 or 4 students).
- Computer practicals (2h): Workshop on Life Cycle Assessment (LCA) methodology. Computer lab using software Simapro to solve a problem based on a carbon footprint assessment and deliver a case study report.
- Oral presentation either individually or in small groups (4h): analysis of case studies and reports on environmental management and technologies. Oral presentations and open debate.
- Thematic seminar (2h): introduction to waste management, video viewing and debate.
- Site visit virtual (2h): video materials with Q&As on processes and facilities related with the course contents (e.g., sewage treatment plant, urban waste classification and composting plant)

These activities in small groups match with competences CB2R and CEX10, and the learning outcome 64.

Group tutoring (2h)

- Group tutoring to check and supervise progress on coursework.

In this activity the competence CB2R will be developed.

Students with special educational needs should contact the Student Attention Service (Servicio de Atención y Ayudas al Estudiante) in order to receive the appropriate academic support

5. ASSESSMENT METHODOLOGY

The written exam could be answered in English language for foreign students (60%). The written exam evaluates the competence CB2R y CEX10.

Attendance to practical sessions and/or participation in classes (10%).

Workshop on life cycle assessment with SimaPro software. Problem-solving exercise of a LCA case study. Final report (10%).

Project oral presentation based on emerging technologies (20%). The oral presentation could be delivered in English. The competences CB2R y CEX10 will be evaluated with this work.

6. BOOKLIST ([Access the bibliography in the Library catalog](#))

MAIN BOOKLIST:

- Environmental engineering [Recurso electrónico]. Edition: 4th ed.. Author: Weiner, Ruth F.. Publisher: Amsterdam ; Boston : Butterworth-Heinemann, c2003. ([Library](#))
- Life cycle assessment student handbook edited by Mary Ann Curran.. Edition: Test edition. Author: Curran, Mary Ann, editor.. Publisher: Scrivener Publishing ([Library](#))

7. SUSTAINABLE DEVELOPMENT GOALS

Educación de calidad

Agua limpia y saneamiento

Ciudades y comunidades sostenibles

Producción y consumo responsables

Acción por el clima

Vida submarina

Vida de ecosistemas terrestres

DETAILED INFORMATION

The course Fundamentals of Environmental Technology is intrinsically linked to several Sustainable Development Goals (SDGs) of the United Nations' 2030 Agenda. Specifically, the theoretical content of Block II and the practical aspects of wastewater treatment directly align with SDG 6: Clean Water and Sanitation. Additionally, Block III, which addresses air pollution and techniques for purifying gaseous contaminants, is essential for contributing to the creation of Sustainable Cities and Communities (SDG 11). Furthermore, Block V of the course equips students with critical tools to implement more sustainable and responsible production practices in industry (SDG 12: Responsible Consumption and Production). Lastly, environmental technology applied to air, water, and soil aims to reduce atmospheric pollutants, including greenhouse gases (SDG 13: Climate Action), and to protect the biodiversity and health of marine and terrestrial ecosystems (SDG 14: Life Below Water and SDG 15: Life on Land). Additionally, the course fosters critical thinking, essential for Quality Education (SDG 4), through debates and practical projects on environmental sustainability.

8. VIRTUAL / CLASSROOM TEACHING SCENARIO

Teaching methodology indicated in the original course syllabus will be the same and all students will attend to class and practical sessions in person.

(*) The Centre may establish a different percentage of attendance depending on the number of students and the capacity of the classroom/laboratory.

(**) The Centre may establish rotating attendance depending on the number of students and capacity of the classroom/laboratory (class in the timetable and classroom/laboratory assigned to a part of the group and retransmission by videoconference to the rest, with periodic rotation of students, as determined by the Centre).

9. VIRTUAL TEACHING SCENARIO

TEACHING METHODOLOGY

The online videoconference system Google Meet substitutes face-to-face interaction in the same official week, days and times established in the official timetables.

Practical session will be replaced by learning activities online (synchronous/ asynchronous) and the project will be oral presented by Hangout Meet.

ASSESSMENT SYSTEM

- Online final exam in the virtual classroom (Hangout Meet): 50%
- Practical activities: 50%

RESOURCES AND FACILITIES

Analysis of practical cases and oral presentations will be online with Google Meet.

The adaptation to online teaching implies the use of synchronous and asynchronous activities with the support offered at the Intranet site -Docencia Virtual- at Universidad de Jaén and videoconferences by Hangout Meet.

DATA PROTECTION CLAUSE (on line exams)

Institution in charge of data processing: Universidad de Jaén, Campus Las Lagunillas, s/n, 23071 Jaén

Data Protection Delegate: dpo@ujaen.es

Purpose: In accordance with the Universities Law and other national and regional regulations in force, carrying out exams and assessment tests corresponding to the courses students are registered in. In order to avoid frauds while sitting the exam, the exam will be answered using a videoconference system, being able the academic staff of the University of Jaén to compare and contrast the image of the person who is answering the exam with the student's photographic files. Likewise, in order to provide the exam with evidential content for revisions or claims, in accordance with current regulation frameworks, the exam will be recorded and stored.

Legitimacy: compliance with legal obligations (Universities Law) and other national and regional regulations currently in force.

Addressees: service providers who are the owners of the platforms where the exams are carried out and with whom the University of Jaén has signed the corresponding data access contracts.

Storage periods: those established in current in force regulations. In the specific case of exam videoconference recordings, not before the examination records and transcripts are closed or the exam can still be reviewed or challenged.

Rights: you can exercise your right of access, amendment, cancellation, opposition, suppression, limitation and portability by sending a letter to the postal or electronic address indicated above. In the event that you consider that your rights have been violated, you may submit a complaint to the Andalusian Council for Transparency and Data Protection www.ctpdandalucia.es

CLASS RECORDING CLAUSE PERSONAL DATA PROTECTION

Person in charge: Universidad de Jaén, Paraje Las Lagunillas, s/n; Tel.953 212121; www.ujaen.es

Data protection delegate (DPO): TELEFÓNICA, S.A.U. ; Email: dpo@ujaen.es

Procedure aim: To manage proper recordings of teaching sessions with the aim of facilitating learning process under a multimodal and/or online teaching

Period for record storage: Images will be kept during legal term according to regulations in force

Legitimacy: Data will be managed according to legal regulations (Organic Law 6/2001, December 21, on Universities) and given consent provided by selecting corresponding box in legal admission documents

Data recipients (transfers or assignments): Any person allowed to get access to every teaching modality

Rights: You may exercise your rights of access, rectification, cancellation, portability, limitation of processing, deletion or, where appropriate, opposition. To exercise these rights, you must submit a written request to the Information, Registration and Electronic Administration Service of the University of Jaén at the address above, or by e-mail to the address above. You must specify which of these rights you are requesting to be satisfied and, at the same time, you must attach a photocopy of your ID card or equivalent identification document. In case you act through a representative, legal or voluntary, you must also provide a document that proves this representation and identification. Likewise, if you consider that your right to personal data protection has been violated, you may file a complaint with the Andalusian Data Protection and Transparency Council www.ctpdandalucia.es

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