COURSE DATA

DATA SUBJECT

Code: 34930
Name: Environment and sustainability
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1404 - Degree in Industrial Electronic Engineering	Escola Tècnica Superior d'Enginyeria	2	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1404 - Degree in Industrial Electronic Engineering	Principles of environmental technologies and sustainability	COMPULSORY

COORDINATION

SANCHEZ TOVAR RITA

SUMMARY

The main objective of the subject Environment and Sustainability is to gain a global view of the environmental pollution on the basis of its origins and problems, attending also to the sustainability principles, the environmental technologies and its application. It is a compulsory subject that is taught quarterly in the first semester of the second year of the Degree in Chemical Engineering. The subject consists of a total of 6 ECTS.

This subject aims for students to become aware of environmental problems, mainly those derived from industrial activities, and that they acquire the strategies and approaches to solve these problems from the perspective of sustainable development principles, prevention of pollution, or, ultimately, from the application of remediation technologies.

The general objectives of the subject are:

- Introduce to students the origins of pollution, its problems and basic principles for its control.
- Ensure that the student understands the concept of sustainability and its integration in the industrial activity.

- To acquaint students with the tools of environmental management, and especially its application in industry.
- Introduce to students the different measures and technologies for the prevention and control of pollution.
- Stimulate and encourage the student those values and attitudes of respect for the environment that should be inherent to an engineer.

The subject contents are: **Sources of environmental pollution. Assessment of water quality. Types of waste and its characterization. Air pollutants. Measurement and control of air quality. Soil contamination. Legislative framework. Waste management strategies, wasted effluents and emissions. Concept of sustainability. Tools for sustainable development in the industry. Wastewater, waste and atmospheric emissions treatment schemes.**

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It is recommended that the student has basic knowledge of physics and chemistry.

COMPETENCES / LEARNING OUTCOMES

1404 - Degree in Industrial Electronic Engineering

CG11 - Knowledge, understanding and ability to apply the necessary legislation for practising professionally as a qualified industrial engineer.

CG27 - Basic and applied knowledge of environmental technologies and sustainability.

CG3 - Knowledge of basic and technological subjects that allows students to learn new methods and theories and provides them with versatility to adapt to new situations.

CG4 - Ability to solve problems with initiative, decision-making skills, creativity and critical reasoning and to communicate and transmit knowledge, abilities and skills in the field of industrial engineering (with specific industrial electronics technology).

CG5 - Knowledge to carry out measurements, calculations, assessments, appraisals, surveys, studies, reports, work plans and analogous work.

CG6 - Ability to deal with specifications, regulations and mandatory standards.

CG7 - Ability to analyse and assess the social and environmental impact of technical solutions.

CG8 - Ability to apply the principles and methods of quality control.

DESCRIPTION OF CONTENTS

1. ORIGINS AND PROBLEMS OF ENVIRONMENTAL POLLUTION

Economy, Society and Environment. Interaction between industry and environment. Concept of sustainability and its integration into production processes. Tools for sustainable development in the industry. Environmental Management Systems. Functions of the engineer.

2. WATER POLLUTION

Assessment of water quality. Evaluation of water quality. Characterization of natural and wastewaters. Legislation. Wastewater treatments. Sludge treatment. Schemes of wastewater treatment.

3. ATMOSPHERIC POLLUTION

Atmospheric emissions. Atmospheric pollutants. Measurement and control of air quality. Pollutants dispersion. Control of the atmospheric pollution. Legislation.

4. WASTE

Waste management strategies. Waste classification. Types of waste and characterization. Urban waste. Hazardous waste. Prevention/minimisation, reuse, recycling, valorisation, final treatment. Contamination and treatment of contaminated soils. Another type of contamination. Legislation.

5. INTEGRATED POLLUTION PREVENTION IN INDUSTRIAL PROCESSES

Legal Framework. Types of actions. Best available technologies. Lines of action. Environmental impact assessment.

6. DESIGN FOR ENVIRONMENT

Integrated Product Policy. Life cycle analysis. Eco-design. Design for X.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	45,00
Classroom practices	15,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	30,00
Independent study and work	0,00
Preparation of lessons	40,00
Preparation for assessment activities	20,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The methodology used in the course will consider the following aspects:

Classroom Sessions: a global view of each part will be offered to the students, and they will be focused on those key concepts that will be developed as well as resources to be used for further preparation of the subject in depth. These sessions will present examples and some practical applications, will solve problems and will include presentations and work on groups to enhance the assimilation of the concepts introduced. (Competences CG3, CG5, CG6, CG7, CG8, CG11 and CG27).

Practical Activities: includes practical classes and seminars that will include, under the supervision of the teacher, practical problems and presentations (Competences CG3, CG4, CG5, CG6, CG7, CG8, CG11 and CG27).

EVALUATION

The subject will be evaluated, both in the first and second call, by continuous assessment and by taking an individual test (EXAM) on the date of the official call.

- Continuous assessment: It consists of carrying out and delivering non-recoverable activities, in which the theoretical / practical concepts studied in the classroom are worked on. Part of these activities are carried out in the classroom during the established sessions, while others must be carried out by students out of the class.

- Exam: it consists of carrying out an exam composed of a theory part and a problem part and covers the contents of the entire subject. To pass the exam, the student must obtain at least 5 points out of 10.

The final grade for the course will be obtained as the maximum grade of:

- Average of the mark of the activities delivered (20%) and the mark of the exam (80%), as long as the exam gives a mark equal to or greater than 5 points out of 10.

- Grade obtained in the exam (100%).

The minimum mark to pass the course is 5 points out of 10. The final mark, if the subject has not been passed due to having obtained a mark lower than 5 points out of 10 in the exam, will be the mark of the exam.

In any case, the evaluation system will be governed by the provisions of the Regulation of Avaluació iQualificació of the University of Valencia per a títols de Grau i Màster (http://links.uv.es/7S40pjF).

Copying or plagiarism of any activity that is part of the evaluation will result in the impossibility of passing the course, and the student will then be subject to the appropriate disciplinary procedures indicated in the ACTION PROTOCOL FOR FRAUDULENT PRACTICES AT THE UNIVERSITY OF VALENCIA (ACGUV 123/2020).

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