

**COURSE DATA****Data Subject**

<b>Code</b>	34922
<b>Name</b>	Engineering, society and university
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2023 - 2024

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1404 - Degree in Industrial Electronic Engineering	School of Engineering	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1404 - Degree in Industrial Electronic Engineering	7 - Engineering, society and university	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
CASTIÑEIRA IBAÑEZ, SERGIO	242 - Electronic Engineering
DOMINGUEZ VILAPLANA, RAFAELA	225 - History of Science and Documentation
JIMENEZ ANTOLIN, MARIA DEL CARMEN	270 - Research Methodology, Educational Diagnosis and Assessment

**SUMMARY**

The subject "Engineering, Society and University" is compulsory in the first course of the degree in Industrial Electronic Engineering. It comprises 6 ECTS and is taught in the first semester of the first course.

This subject aims to place the new students in the context in which they will develop both their studies and their profession once they graduate. To do this, the subject is divided into two main blocks. In the first, work aims facilitating the integration of college students, providing them with knowledge and tools to facilitate the transition from high school to college.



The second section provides an overview of engineering in their various specialties and in particular of one of Industrial Electronic Engineering as seen from the perspective of their relations with science, technology, economics, society and the environment. It is to show the profession accounting for the implications of this in the development of societies, stressing at all times, in the ethical and environmental commitments of the engineer as well as in the principles of equality of opportunity, democratic values and culture of peace.

The main objectives of the course are:

- Facilitate the incorporation and integration of students into university life, especially in graduate studies in Industrial Electronic Engineering:
  - structure and organization of the University of Valencia
  - services and human resources, administrative and information offered by the University of Valencia
  - objectives, content and studies program.
- Develop an action plan to guide and tutorial following the process of joining the university.
- Encourage student participation in representative bodies and academic extracurricular activities.
- Develop transferable skills: planning time and study skills, management of information technologies and communication tools for calculation and presentation of documents, reports, and literature search, basic laboratory and experimentation techniques.
- Provide a historical perspective of engineering, its major periods and problems, all within the context of its relations with science, technology, economy, society and the environment.
- Provide a vision of sex / gender system given equal opportunities, incentives and obstacles for women in the areas of engineering.
- Provide an overview of the features of the scientific and technical terminology.
- Encourage and foster in students those values and attitudes that should be inherent to an engineer.
- Disseminate the profiles and the areas of performance of engineering graduates.

The course contents are:

- Introduction to college. Mentoring program for new students. Structure of the university. Curriculum. Study techniques and troubleshooting. Tools for access to Information: Library, corporate website, corporate email, e-learning platform.
- Engineering and society:
  - Engineer in the company and management. Professional ethics.
  - Sustainable development and environmental responsibility.
  - Equality opportunities and gender: incentives and barriers.

To cover the course content is organized into two parts distributed according to:

Part I. Joining the University and graduate studies in Industrial Electronic Engineering: thematic units 1 to 9.

Part II. Engineering, Industrial Electronic Engineering and Society: Thematic units 10 to 14.



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

## OUTCOMES

### 1404 - Degree in Industrial Electronic Engineering

- 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).
- CG7 - Ability to analyse and assess the social and environmental impact of technical solutions.
- CG9 - Ability to organise and plan work in companies and in other institutions and organisations.
- CG10 - Ability to work in a multilingual and multidisciplinary environment.
- CG11 - Knowledge, understanding and ability to apply the necessary legislation for practising professionally as a qualified industrial engineer.

## LEARNING OUTCOMES

Learning outcomes:

- Know the structure of university services and student participation bodies (G4).
- Understand the structure of the curriculum and the role of each subject in engineering education (G4).
- Acquiring skills in information management and use of the university web tools (G4,G9).
- Acquire organizational skills and planning (G4,G9).
- Acquire skills in the application of methodologies for study and solve engineering problems (G4).
- Develop critical thinking skills, creativity and decision making (G4).
- Gain a general understanding of the engineering profession, including gender perspective (G4).
- Understand the ethical and professional responsibilities and be aware of the impact of engineering solutions in the social and environmental context (G7).
- Understand the areas of performance in business and administration (G4).
- Be able to gather information and make judgments on issues of social, scientific, technological or ethical concern (G7).
- Be able to reflect on issues of equal opportunity, democratic values and a culture of peace (G7).

Skills to be acquired:



The student should be able to:

- Recognize the structure and organization of the University of Valencia.
- Identify services and human resources, administrative and informatics, offered by the University of Valencia.
- Recognize the structure, organization and services at the ETSE.
- Relate the objectives, and contents of the study program.
- List the representative bodies of students.
- Complete planning of time models.
- Apply study skills.
- Manage information technology and communication.
- Manage calculation tools and presentation of documents.
- Prepare reports.
- Conduct literature and legislation searches.
- Use basic laboratory and experimentation techniques.
- Gain a historical perspective of technology development, its main stages, characters and problems
- Analyze relationships with rigor of engineering with science, technology, economics, society and the environment.
- Assessing equal opportunities, incentives and obstacles that women find in the areas of engineering.
- Define engineering and differentiate the various branches of the same.
- Recognize the engineering-related occupations in their respective spheres of action.
- Identify own working methods of engineering.
- Learn to properly manage scientific and technical terminology.
- Define Industrial Electronic Engineering and explain its relationship to the process industry.
- Recognize the professional profiles and areas of performance of graduates in Industrial Electronic Engineering.
- Analyze the values and attitudes relating to the practice of engineering.

In addition to the specific objectives mentioned above, the course will encourage the development of several technical and social skills, among which include:

- Capacity for analysis and synthesis.
- Ability to argue from rational and logical criteria.
- Ability to communicate properly and organized.
- Ability to personal work.
- Ability to work in groups.

## DESCRIPTION OF CONTENTS

### 1. Host activity.

Host session. Objectives of the studies. Organization of the first course: school calendar, timetable, exam schedule. Agenda.

Conference: The transition to the University of Valencia.



## **2. The University of Valencia. Presentation and structure**

History of the University. Mission. Structure. Campus and Centers.

activities:

Questionnaire about structure of the University of Valencia

Locating Centers and Study programs

## **3. ETSE**

Organization of School: Central Board, Departments, Commissions. Academic Title Committee. ADR and student representation. Secretariat. Facilities. Quality programs, mobility and placement. Procedure to follow in a emergency scenario. Web ETSE.

activities:

Questionnaire about structure ETSE

Location of student representatives

Collection of times and places for students attention

## **4. Resources and Services University of Valencia**

DISE, CADE, CAL, OPAL, University Library, Physical Education and Sports, Students, SFP, Safety, Health and Environmental Quality. Virtual Secretary. Email. Virtual Classroom. Web of the University of Valencia.

activities:

Special presentations by staff of the services of most interest to students.

## **5. Graduate Studies in Industrial Electronic Engineering**

Legal Framework. Curriculum at the University of Valencia. Curriculum at other universities. Postgraduate studies.

activities:

Analysis of the sequencing of subjects for the acquisition of competencies of the grade.

Consultation and comparison of curricula from other Spanish universities and / or European.

## **6. Tutorial Action Plan for new students**

Tutoring and guidance on topics of subjects, study methods, planning of activities and difficulties detection and monitoring of incorporation.

activities:

Individual and group meetings with the tutor or mentor.



## **7. Work planning and study techniques**

Agenda organization, planning of study in higher education: planning for the short, medium and long term. Factors influencing the study. Reading. Basic teaching techniques and active study, underline and outline, abstract, memorization and recitation. Structuring reports.

activities:

- Task of planning of work
- Homework on study skills

## **8. ICT tools in graduate studies in Industrial Electronic Engineering**

Handling word processing, spreadsheet, presentation programs, and mathematical software.

activities:

- Preparation of a presentation: What is Industrial Electronic Engineering?
- Practice of treatment of experimental results: performing calculations, adjustments and graphics
- Preparing a report of experimental results

## **9. Basic laboratory and experimentation techniques**

Safety in the laboratory. Common material handling in a laboratory of Industrial Electronic Engineering. Measure voltage, current and frequency.

activities:

- Development of a guide-summary of laboratory
- Practice material handling and customary measures in Industrial Electronic Engineering

## **10. History of technology.**

Main periods in the history of technology. Introduction: primitive techniques, technology in the Ancient world, the Middle Ages and the Scientific Revolution. Industrial Revolution. Technology in 19th century. Technoscience in 20th century.

Activities:

- Activity dealing with the history of technology.

## **11. Science, technology and society**

Introduction. Technological systems. Technological innovation and scientific research. Transfer and spread of technological novelties. Technology and gender. Women in technology. Technology and socio-economic development. Technology and environment. Technology and culture.

Activities:

- Questions on science, technology and society



## **12. Work methods in science and technology.**

Introduction to the problem of the scientific method. Scientific and technical terminology. Technological information: oral, written and graphical communication. The technical report. Patent systems and the protection of inventions. Circulation of information in science and technology. Recovery of information: databases, encyclopaedias, reference works

Activities:

Activity dealing with the localization of a patent and the analysis of its structure and content.

## **13. Engineering as a profession.**

Professions and occupations in science and technology. Scientific and technological disciplines. The formation and development of specialities. The teaching of science and technology. The control of professional practice. The role of experts in contemporary societies. Technology and risk society. Engineering and its application fields: industry, utility companies, public administration. Professional associations. Ethics and professional deontology. Technology and its current and future challenges.

Activities :

Activities dealing with ethical problems and/or the professional practice of engineering.

## **14. Industrial Electronic Engineering and Electronic engineer**

Industrial activity and the process industry. The emergence and evolution of Industrial Electronic Engineering. Definition of Industrial Electronic Engineering. The industrial engineer and chemical engineer. Functions of the chemical engineer in the industrial enterprise in the service business and in administration. Current challenges for Industrial Electronic Engineering.

Activities:

Conferences of professionals from various fields of Industrial Electronic Engineering  
Visit to a electronic engineering industry.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Classroom practices	25,00	100
Theory classes	25,00	100
Laboratory practices	10,00	100
Development of individual work	40,00	0
Preparation of evaluation activities	15,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	20,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

The development of the course is structured around the theory classes, practical classes and seminars, visits, lectures, tutorials and completion of work.

In the lectures the teacher will present and explain the contents of each issue to highlight those key aspects of comprehension (G4, G9).

In practical classes and seminars students, under the direction and supervision of staff, will carry out work and presentation and discussion of issues. Include activities in the computer classroom (see web pages, databases, using tools, etc.) and in the laboratory (basic techniques) or workshops (study skills workshops, presentations, etc.) (G4, G7, G9).

To complement this training course visits to the facilities and services of the university and companies in the field of Industrial Electronic Engineering, as well as a series of lectures by professionals who provide students with the vision of the profession and field performance of graduates are scheduled (G4, G7, G9).

The tutorials in this course will guide in matters of subjects, study methods, planning and detection of problems and monitor the incorporation of the student to college.

The proposed work will include both the student reporting and work as the development of questionnaires, in many cases as self-correcting tests, aimed at preparing and / or strengthen the most important concepts of each topic. Some of these activities will be held in class and the rest will have a timetable for completion and delivery by the students. After correction, the students will be informed of their results (G4, G7, G9).

**EVALUATION**



The assessment of student learning will be realized following two models, Type A (or continuous assessment) and Mode B, which will be directed to verify that they have assimilated the basic concepts and they have worked on skills acquisition

### **Method A - Continuous evaluation.**

Continuous assessment: degree of participation and involvement in the teaching-learning process, taking into account participation, planned activities and completion of questionnaires and proposed work and grading. The percentage allocation of each part of continuous assessment is as follows:

Participation: 10% (up to a point of the final grade for the realization of all activities).

Evaluable questionnaires and activities: 70% (in the virtual classroom quizzes, activities in the classroom and laboratory sessions, etc.).

Final Job: 20%

A minimum score of 5 in the final work is required to approve the subject.

### **Method B.**

In mode B, there will be a test of basic knowledge and skills in the official date and a mandatory individual final job. Finally, for students who carried out the questionnaires, activities and work for continuous assessment, will be considered and evaluated up to 1.5 points out of 10.

In summary, the weighting of each part of the mode B will be:

Theoretical and practical examination in the official call: 75%

In this case the examination will be performed through an exam about theoretical contents of the subject at the official call, value 60% of the final qualification, and the realization of a mandatory individual final job to be sent by the official call date with a value of 25% of the final qualification.

Questionnaires and assessments carried out activities in the continuous evaluation: 15%

A minimum score of 5 in the final individual work is required to pass the subject.

Students who choose the continuous assessment (Category A) and do not pass the subject or do not perform 80% of all activities (questionnaires, work, memories, etc..) will have to attend to the first call exam and evaluation form will then be the mode B. In the second round evaluation form is the form B.



In any case, the evaluation system will be governed by what is established in the Evaluation and Qualification Regulations of the University of Valencia for Degrees and Masters.

(<https://webges.uv.es/uvTaeWeb/MuestraInformacionEdictoPublicoFrontAction.do?accion=inicio&idEdictoSeleccionado=5639>).

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