

**COURSE DATA****DATA SUBJECT**

Code: 36893
Name: Process and Product Engineering II Dual Mention
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1401 - Degree in Chemical Engineering	Escola Tècnica Superior d'Enginyeria	4	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
1401 - Degree in Chemical Engineering	Process and product engineering	COMPULSORY

COORDINATION

LLOPIS ALONSO FRANCISCO

PASTOR ALCAÑIZ LAURA

MARTINEZ SORIA VICENTE

SUMMARY

It is a key subject in the curriculum of the Chemical Engineer due to the great importance that the knowledge of industrial chemical processes has for him/her. It will be oriented towards the description and analysis of these processes with special emphasis on the aspects related to the choice and use of raw materials, energy conservation and the environment. Key aspects of product engineering will also be dealt with.

Compulsory subject for students studying the Degree in Chemical Engineering - Dual Mention.

PREVIOUS KNOWLEDGE**RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE**

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



OTHER REQUIREMENTS

In order to successfully take the course, it is advisable that the student has passed the previous courses of the degree.

In order to be able to take the course, the student must have been selected to enroll in the option of Degree in Chemical Engineering- Dual Mention.

COMPETENCES / LEARNING OUTCOMES

1401 - Degree in Chemical Engineering

Act autonomously in learning, make informed decisions in different contexts, issue judgements based on experimentation and analysis and transfer knowledge to new situations.

Analyse and evaluate the social and environmental impact of technical solutions.

Be able to understand and apply the legislation required for the practice of the profession of technical industrial engineer.

Capacidad para la dirección, de las actividades objeto de los proyectos de ingeniería descritos en el epígrafe anterior.

Conocimientos sobre balances de materia y energía, biotecnología, transferencia de materia, operaciones de separación, ingeniería de la reacción química, diseño de reactores, y valorización y transformación de materias primas y recursos energéticos.

Draft, sign and develop projects within the field of industrial engineering, aimed at constructing, renovating, repairing, maintaining, demolishing, manufacturing, installing, assembling or operating structures, mechanical equipment, energy systems, electrical and electronic installations, industrial facilities and plants, and manufacturing and automation processes, in accordance with the knowledge acquired through the specific technology of industrial chemistry.

Saber comunicarse de manera efectiva, tanto de forma oral como escrita, adaptándose a las características de la situación y de la audiencia

Solve problems with initiative, make decisions, think creatively and critically, and communicate and convey knowledge, skills and competences in the field of industrial engineering.

Work in a multilingual and multidisciplinary environment.

DESCRIPTION OF CONTENTS

The objective of this subject is that the student, through the study of industrial chemical processes, acquires knowledge on the valuation and transformation of raw materials and energy resources.

WORKLOAD

**PRESENCIAL ACTIVITIES**

Activity	Hours
Internship	60,00
Total hours	60,00

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	40,00
Independent study and work	50,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	90,00

TEACHING METHODOLOGY

Within the programming of the subjects of the Dual Mention, the types of teaching activities that will be developed will be mainly:

MD5.- Attendance to courses and seminars: optional activity proposed, where appropriate, by the student, the university tutor or the company tutor. In case it is not carried out, the dedication will be complemented with attendance to the internship center.

MD7.- Lectures on the contents of each subject. In them, the topics will be developed providing a global and integrating vision, analyzing in greater detail the key aspects and of greater complexity, encouraging at all times, the participation of the student.

MD8.- Seminars or workshops.

MD10.- Tasks in the center where the internship is performed, which should include an integration of the student in the work environment of the company, receiving training from the company and providing solutions and initiative.

MD11.- Scheduled tutorials (individual or group).

MD12.- Practical activities that complement the theoretical activities in order to apply the basic concepts and expand them with the knowledge and experience acquired during the realization of the proposed work. Some of these activities will be carried out in small groups.

The company will appoint a company tutor and in turn the ETSE-UV will appoint an academic tutor. The coordination will be:



- Company tutor-academic tutor
- Company tutor - student
- Academic tutor-student It is proposed that meetings be held, preferably face-to-face, with the following frequency:
 - Company tutor-academic tutor: meetings will be held at the beginning and end of the training period. During this period, at least one meeting per month will be planned.
 - Company tutor-student: at least one meeting at the beginning of the training, one every two weeks and at the end of the training period.
 - Academic tutor-student: at least one meeting at the beginning of the training, biweekly and at the end of the training period.

The tutor appointed by the company must have higher education (Bachelor, Engineering or Degree) and will need to get the positive report from the joint committee overseeing dual training.

The tutor in the company will be responsible for coordinating the incorporation of the student, managing the planned training with the people in the company in charge of providing it, all with sufficient time in advance of the student's entry. In addition, he/she will ensure that the person to be trained receives the necessary equipment: PPE, work clothes, locker room assignment, etc.

The company tutor will meet, at least every two weeks, with the student to supervise his/her development and evaluate his/her work, indicating the points to be improved and his/her strong points. He/she will previously meet with the people who are providing his/her training to gather the necessary information for these follow-up meetings.

The academic tutor will ensure compliance with the training plan by the company and by the student and will mediate in case of conflict between the student and the company. Specifically, the academic tutor, through the coordination mechanisms, will ensure that the student acquires the learning outcomes foreseen in the training plan.

EVALUATION

The evaluation of the students of the Dual Mention will be carried out through a continuous evaluation system in which both the company tutor and the academic tutor will be involved. The system is based on the evaluation of knowledge, skills and competences acquired by the students.

The activity developed will be evaluated by means of:



1. Surveys and follow-up reports that allow to know the acquisition of knowledge, skills and competences of the students.
2. A rubric agreed upon by the company tutor and the academic tutor, which will be specified in the training plan.
3. The meetings and follow-up interviews carried out between the tutors and the student in which the degree of compliance with the training plan and the competencies acquired will be verified.
4. A written or oral exam if required by the activities carried out in the company.

The process involves the feedback of results to the evaluated student by his/her company and university tutors on his/her development and performance, establishing possible measures of action for a process of continuous improvement and growth.

REFERENCES

- Introducción a la química industrial (2a. ed.), Vian Ortuño, Ángel. España: Editorial Reverté, 2012. ProQuest ebrary. Web. (libro electrónico).
- Manual de Procesos Químicos en la Industria, Austin, G.T., G.T., Ed. MacGraw-Hill, 1992, traducción de Shreves Chemical Process Industries (5ª Edición), Ed. MacGraw-Hill, 1984.
- Riegel's Handbook of Industrial Chemistry (8ª Edición), Kent, J.A., Ed. Van Nostrand Reinhold Company, 1983.
- Handbook of Chemical Production Processes, Meyers, R.A., Ed. MacGraw-Hill, 1986.
- Survey of Industrial Chemistry, Chenier, P.J., Ed. Wiley Interscience, 1986.
- Refino de Petróleo, Gary, J.H. y Handwerk, G.E., Ed. Reverté, 1980.
- Petróleo y gas natural: industria, mercados y precios, Parra Iglesias, Enrique
- Ediciones Akal, 2003. Recurso electrónico.
- Refining Processes Handbook, Parkash, Surinder, Ed. Gulf Publishing Company, 2003. Recurso electrónico.
- Dirección y gestión de la producción, Rodrigo, C. y Molí, J., Ed. Sanz y Torres, 2011.
- Guía de Mejores Técnicas Disponibles en España del sector refino de petróleo. Documento BREF. Recurso electrónico. Ministerio de Medio Ambiente, 2004.
- Guía de Mejores Técnicas Disponibles en España de fabricación de cemento. Recurso electrónico. Ministerio de Medio Ambiente, 2003.
- Documento de referencia de Mejores Técnicas Disponibles en la industria de fabricación de vidrio. Documento BREF. Recurso electrónico. Ministerio de Medio Ambiente, 2004.
- Mejores Técnicas Disponibles de referencia europea: Producción de polímeros. Documento BREF. Recurso electrónico. Ministerio de Medio Ambiente y Medio Rural y Marino. Traducción del original, 2009.