

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

<b>Code</b>	34775
<b>Name</b>	Quality management
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1401 - Degree in Chemical Engineering	School of Engineering	4	Second term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1401 - Degree in Chemical Engineering	23 - Optional subjects	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
FRANCO VIÑUALES, CARLOS FRANCISCO	245 - Chemical Engineering
PICAZO RODENAS, MARIA JOSE	245 - Chemical Engineering
SORIANO CARDO, CARLOS	245 - Chemical Engineering

**SUMMARY**

The optional course Management of Quality is taught in the fourth year in the degree in Chemical Engineering. The curriculum includes 4.5 ECTS. This subject aims to deepen into the knowledge and application of the main quality management instruments related to the chemical industry. Advanced techniques of statistical quality control, quality and environmental management systems and application of specific regulations for the treatment of business aspects such as occupational health, management in the food industry, corporate social responsibility, and incorporation of the gender perspective in companies and the control of information security are overcome. This subject serves as a complement to the knowledge acquired in previous subjects related to the management of production, such as "Organization and Management of Production".



The contents of the subject are summarized in three thematic units:

1. Advanced statistical techniques of control and improvement of quality
2. Quality and environmental management systems
3. Expansion of management systems in the industry

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

To successfully tackle the subject it is necessary that the student has acquired the competences of the subjects: Management and Organization of Production

## OUTCOMES

### 1401 - Degree in Chemical Engineering

- O1 - More comprehensive skills than those acquired in compulsory subjects.

## LEARNING OUTCOMES

- To be able to establish a computerized system for planning the quality control of a process (O1)
- To know how to apply the methodologies of statistical quality control (O1)
- To project actions for statistical improvement of the quality of a process (O1)
- To know the key points of management systems. Focus High Level Structure (O1)
- To know the specific and common characteristics of the models of quality and environmental management systems (O1)
- To know how to write the different documents of the systems and how to undertake the integration of systems (O1)
- To know the most relevant aspects of the specific business management standards in aspects of occupational health, food safety, corporate social responsibility, gender perspective and information security. (O1)

## DESCRIPTION OF CONTENTS

**1. Management systems at the industry**

- 1. Management systems at the industry.
- 1.1. Introduction to management systems at the industry.
- 1.2. Safety and health management systems.
- 1.3. Food safety management systems.
- 1.4. Information security management systems.

**2. Quality and environmental management systems**

- 2. Quality and environmental management systems
- 2.1. Quality Management Systems.
- 2.2. Environmental management system.
- 2.3. Energy efficiency management System.

**3. Advanced statistical techniques for the control and improvement of quality**

- 3. Advanced statistical techniques for the control and improvement of quality
- 3.1. Planning, control and statistical improvement of quality
- 3.2. Sampling, inspection and acceptance plans.
- 3.3. Advanced control graphics
- 3.4. Statistical design of experiments
- 3.5. Computer packages for statistical quality control

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	25,00	100
Classroom practices	20,00	100
Development of group work	40,00	0
Preparing lectures	5,00	0
Preparation of practical classes and problem	5,00	0
Resolution of case studies	17,50	0
<b>TOTAL</b>	<b>112,50</b>	

**TEACHING METHODOLOGY**

- Theoretical activities: topics will be developed in the lectures by providing a comprehensive and integrated vision, analyzing in more detail the key aspects of greater complexity and encouraging at all times, student participation. Also adequate resources for the subsequent preparation of the issue in depth by the student will be recommended.



- Practical work: Practical classes will complement the theoretical activities in order to apply the basics and expand the knowledge and experience they acquire during the performance of the proposed work. This will be done in the classroom or in small groups. They include the following types of classroom activities:

- Classes of problems and issues in the classroom. The teacher will explain a number of sample problems that allow students to acquire the skills necessary to analyze, formulate and solve the problems of each topic. Student skills for decision making will be enhanced.
- Discussion sessions and troubleshooting or work. In these sessions, which are conducted in small groups, are analyzed and discussed a series of exercises or work previously posed by the teacher and the students worked in small groups.

- Tutorials: In them, the teacher will guide the student on all elements of the learning process. In addition, the teacher will guide the student on the most appropriate methodology for learning basic knowledge of the subject.

The exercises will work and proposed a timetable for completion and delivery by the students. They will consist of individual growth or small group of case studies of application.

## EVALUATION

The evaluation of the learning of the students of each one of the three thematic units of the subject will carry out with one of the following modalities of evaluation:

- A) Exam.
- B) Work.
- C) Exam + Work.

The overall grade of the subject will be the weighted average between each of the three thematic units of the subject.

The minimum grade for each part to average is 4.0.

The minimum grade point average between the three parts to pass the subject is 5.0.

## REFERENCES

### Basic

- AENOR. Norma de sistema de gestión de seguridad y salud. ISO 45001



- Evaluación de riesgos laborales, 2ª edición, INSHT
- AENOR. Norma de sistema de gestión de seguridad alimentaria. ISO 22000
- AENOR. Norma de sistema de gestión de seguridad de la información. ISO 27001
- AENOR. Norma de sistema de gestión de calidad. ISO 9001
- AENOR. Norma de sistema de gestión ambiental. ISO 14001
- Control estadístico de la calidad. Montgomery. Ed. Wiley

#### **Additional**

- Siniestralidad laboral enero 2015-diciembre 2015, 2016, INSHT
- Estudio sobre la protección de datos de las empresas españolas, 2010, Instituto Nacional de Tecnologías de la Comunicación
- Valdés Fernández JL, Asociación Española de Normalización y Certificación. Guía Para La Aplicación De UNE-EN ISO 14001:2015. Madrid: AENOR; 2016. / López Lemos P, Fundación CONFEMETAL (Madrid). novedades Iso 9001:2015. Madrid: Fundación Confemetal; 2016.
- Informe sobre la certificación de calidad y seguridad, 2010, Comisión Nacional de la Competencia
- Estadística para investigadores. Diseño, innovación y descubrimiento. Box, Hunter, Hunter. Ed. Reverté