

EUROPASS DIPLOMA SUPPLEMENT

TITLE OF THE DIPLOMA (ES)

Técnico Superior en Química Industrial

TRANSLATED TITLE OF THE DIPLOMA (EN)⁽¹⁾

Higher Technician in Industrial Chemistry

(1) This translation has no legal status.

DIPLOMA DESCRIPTION

The holder of this diploma will have acquired the General Competence with regard to:

Organising and monitoring operations in chemical processing plants, energy cogeneration and associated auxiliary services, supervising and ensuring their operation, start-up and shut-down, verifying the established safety, quality and environmental conditions.

Within this framework, the PROFESSIONAL MODULES and their respective LEARNING OUTCOMES acquired by the holder are listed below:

“Chemical Industries Organisation and Management”

The holder:

- Applies quality management systems in the chemical industry recognising their organisational and functional structure.
- Guarantees the production schedule analysing work systems and methods.
- Fills in documentation and process reports, relating them with the process monitoring.
- Coordinates work teams in the chemical plant relating the same with the improvement in the process.

“Solids and Fluids Transport”

The holder:

- Controls the transport of fluids analysing the characteristics of installations and the fluid to be transported.
- Controls the distribution of gas analysing the characteristics of installations and the gas to be transported.
- Controls the transport of solids analysing the characteristics of installations and the solid to be transported.
- Organises the operations for the transport of materials, analysing the operations of start-up and shut-down.

“Energy Generation and Recovery”

The holder:

- Controls the generation of thermal energy in a chemical plant, relating its production with the main process.
- Optimises the energy efficiency of chemical processes, analysing equipment and lines of distribution.
- Controls energy cogeneration relating it with vapour production and electricity.
- Controls the parameters of water as affluent and effluent, identifying the process specifications.
- Controls the production of industrial refrigeration characterising equipment and distribution networks.

“Basic Operations in the Chemical Industry”

The holder:

- Arranges in sequence the basic operations of chemical processes, characterising and relating them with the properties of the product.
- Monitors the operations of mechanical division in a chemical plant relating them with their working principles.
- Monitors diffusion operations relating the variables of the process with the characteristics of the product to be obtained.
- Organises operations of mechanical division and diffusion, analysing start-up and shut-down procedures.

“Chemical Reactors”

The holder:

- Monitors reaction processes analysing the involved variables.
- Selects catalysts relating them with the reaction of the industrial chemical process.
- Monitors the processes of electrochemical divisions relating the interaction between electric current and chemical reaction.
- Controls bio reactions analysing the intervening micro organisms and their function.

“Control of the Chemical Process”

The holder:

- Determines the physicochemical control parameters of the chemical process, relating them with the quality of the final product.
- Organises sampling plans relating them with the chemical industry quality.
- Measures variables in the chemical process, assessing the obtained results.
- Regulates control loops in chemical processes analysing their elements and control procedures.

“Electromechanical Maintenance in Processing Industries”

The holder:

- Identifies the materials that constitute equipment and installations in the chemical industry relating them with their characteristics and use.
- Analyses the mechanical elements of equipment, machinery and installations recognising their function.
- Characterises hydraulic and pneumatic installations assessing their intervention in the chemical process.
- Identifies electric machinery relating it with their function within the process.
- Characterises maintenance actions justifying needs.

“Formulation and Mixtures Preparation”

The holder:

- Classifies products in transformation chemistry relating them with production techniques and their applications.
- Obtains dispersed systems relating them with their concentration formula and conditions to obtain them.
- Selects mixture techniques relating them with the characteristics of the components and the final product.
- Controls mixture processes, analysing the characteristics of the final product.

“Arrangement and Storage of Chemical Products”

The holder:

- Controls mixture processes, analysing the characteristics of the final product.
- Controls the storage of materials and chemical products analysing production constraints.
- Optimises arrangement lines for chemical products, justifying their organisation.
- Controls the operations of loading and unloading chemical products, analysing needs and stock.

“Risk Prevention in Chemical Industries”

The holder:

- Supervises the application of safety rules while machinery, equipment and installations are in operation, identifying associated risks and their prevention measures.
- Supervises the application of environmental rules during the chemical process, recognising environmental parameters.
- Prevents personal risks, which may affect him/her and others, analysing and applying the risk prevention rules.
- Applies emergency plans, relating them with evacuation techniques.

“Project on Chemical Processing Industries”

The holder:

- Analyses the methodology for the preparation of a project related to the chemical industry structuring its development.
- Designs a project related to the competences of a Higher Technician in Industrial Chemistry, including and developing their constituting stages.
- Defines and plans the project implementation, determining the intervention plan and associated documentation.
- Manages the project defining the monitoring and control procedures.

“Professional Training and Guidance”

The holder:

- Selects job opportunities, identifying the different possibilities of labour integration, and the alternatives of lifelong learning.
- Applies teamwork strategies, assessing their effectiveness and efficiency on the achievement of the company's goals.
- Exercises rights and complies with the duties derived from labour relationships, recognising them in the different job contracts.
- Determines the protective action of the Spanish Health Service in view of the different covered eventualities, identifying the different types of assistance.
- Assesses risks derived from his/her activity, analysing job conditions and risk factors present in his/her labour setting.
- Participates in the development of a risk prevention plan in a small enterprise, identifying the responsibilities of all agents involved.
- Applies protection and prevention measures, analysing risk situations in the labour setting of the Higher Technician in Industrial Chemistry.

“Business and Entrepreneurial Initiative”

The holder:

- Recognises skills related to entrepreneurial initiative, analysing the requirements derived from job positions and business activities.
- Defines the opportunity of creating a small enterprise, assessing the impact on the performance setting and incorporating ethic values.
- Carries out the activities for the setting-up and implementation of a company, choosing the legal structure and identifying the associated legal obligations.
- Carries out basic administrative and financial management activities of an SME, identifying the main accounting and tax obligations and filling in documentation.

“On the Job Training”

The holder:

- Organises operations in the chemical plant guaranteeing compliance with the correct manufacturing regulations.
- Supervises the operations for the preparation of equipment and installations of the chemical process and auxiliary services ensuring their synchronisation in the chemical process.
- Verifies the formulation and preparation of chemical products mixtures following the normalised work procedures.
- Controls the arrangement and storage of chemical products following the normalised work procedures.
- Supervises compliance with safety and environmental rules relating the same with the chemical process efficiency.
- Identifies the company's structure and organization relating the same to the production and marketing of the products obtained.
- Applies labour and ethic habits in his/her professional activity according to the characteristics of the job position and the procedures established by the company.

RANGE OF OCCUPATIONS ACCESSIBLE TO THE HOLDER OF THE DIPLOMA

The Higher Technician in Industrial Chemistry works in the chemical sector within areas of production in chemical plants, energy cogeneration and auxiliary services.

The most relevant occupations or jobs are the following:

- Chemical plant manager
- Chemical products manufacturing, transforming and arranging machinery operations manager
- Energy production area supervisor
- Auxiliary services area supervisor
- Oil and natural gas refineries supervisor
- Staff manager in chemical treatment installations
- Staff manager in chemical companies warehouses
- Chemicals companies tank installation manager
- Manager in the area of receipt and dispatch of chemical materials and products
- Control systems supervisor
- Control area supervisor
- Chemical transformation plant area supervisor
- Arrangement area supervisor
- Formulation manager

AWARD, ACCREDITATION AND LEVEL OF THE DIPLOMA

Name of the body awarding the diploma on behalf of the King of Spain: Spanish Ministry of Education or the different Autonomous Communities according to their areas of competence. The title has academic and professional validity throughout Spain.

Official duration of the education/ training leading to the diploma: 2000 hours.

Level of the diploma (national or international)

- NATIONAL: Non-University Higher Education
- INTERNATIONAL:
 - Level 5 of the International Standard Classification of Education (ISCED5).
 - Level 5 of the European Qualifications Framework (EQF5).

Entry requirements: Holding the Certificate in Post-Compulsory Secondary Education (Bachillerato) or holding the corresponding access test.

Access to next level of education/training: This diploma provides access to University studies.

Legal basis. Basic regulation according to which the diploma is established:

- Minimum teaching requirements established by the State: Royal Decree 175/2008, of 8 February, according to which the diploma of Higher Technician in Industrial Chemistry and its corresponding minimum teaching requirements are established.

Explanatory note: This document is designed to provide additional information about the specified diploma and does not have any legal status in itself

COURSE STRUCTURE OF THE OFFICIALLY RECOGNISED DIPLOMA

PROFESSIONAL MODULES IN THE DIPLOMA ROYAL DECREE	CREDITS ECTS
Chemical Industries Organisation and Management.	4
Solids and Fluids Transport.	8
Energy Generation and Recovery.	10
Basic Operations in the Chemical Industry.	14
Chemical Reactors.	7
Control of the Chemical Process.	17
Electromechanical Maintenance in Processing Industries.	7
Formulation and Mixtures Preparation.	7
Arrangement and Storage of Chemical Products.	5
Risk Prevention in Chemical Industries.	5
Project on Chemical Processing Industries.	5
Vocational Training and Guidance.	5
Business and Entrepreneurial Initiative.	4
On the Job Training.	22
	TOTAL CREDITS
	120
OFFICIAL DURATION (HOURS)	2000

* The minimum teaching requirements shown in the table above comprise 55% official credit points valid throughout Spain. The remaining 45% corresponds to each Autonomous Community and can be described in the **Annex I** of this supplement.

INFORMATION ON THE EDUCATION SYSTEM

