

# EUROPASS DIPLOMA SUPPLEMENT

## TITLE OF THE DIPLOMA (ES)

*Técnico Superior en Programación de la Producción en Fabricación Mecánica*

## TRANSLATED TITLE OF THE DIPLOMA (EN)<sup>(1)</sup>

*Higher Technician in Mechanical Production Scheduling*

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(1) This translation has no legal status.

## DIPLOMA DESCRIPTION

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

Planning, scheduling and monitoring the machining and fitting of equipment manufacturing process, from the documentation of the process and specifications of the products to be manufactured, ensuring management and products quality, as well as the supervision of labour risk prevention and environmental protection systems.

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

### “Graphical Interpretation”

The holder:

- Determines the forms and characteristics of the products to be manufactured, interpreting the symbols represented in the manufacturing plans.
- Identifies whether or not the product to be manufactured supports specific forms and dimensions, analysing and interpreting the technical information included in the manufacturing plans.
- Sketches tools to be used during the making processes, defining the constructive solutions in each case.
- Interprets sketches of machine and equipment automation, identifying the represented elements in pneumatic, hydraulic, electric, programmable and non programmable installations.

### “Definition of the Processes of Machining, Shaping and Fitting”

The holder:

- Determines machining processes through stock removal, abrasion, electrical discharge and special procedures, analysing and justifying the sequence and variables of the process.
- Determines shaping processes, analysing and justifying the sequence and variables of the process.
- Determines fitting processes, analysing and justifying the sequence and variables of the process.
- Determines machining, shaping and fitting costs analysing the costs of the different manufacturing solutions.
- Distributes machinery and equipment throughout the plant relating their physical position with the manufacturing process.

### “Machining Through Computer Numerical Controlled Machine Tools”

The holder:

- Prepares the programs of numerical control, analysing and applying the different types of programming.
- Organises his/her tasks during the machining process, analysing the process sheets and preparing the necessary documentation.
- Prepares computer numerical controlled (CNC) machines, selecting tools and applying the required techniques or procedures.
- Controls the machining process, relating the way the numerical control program works with the characteristics of the final process.

### “Computer-aided Manufacturing (CAM)”

The holder:

- Modifies the geometry of a part interpreting the specifications of the machining process applying CAD techniques.
- Prepares programs of computer-aided manufacturing analysing the specifications of the work process and applying CAM techniques.
- Organises his/her tasks during the machining process, analysing the process sheets and preparing the necessary documentation.
- Adapts the CAM program checking that machined parts and processes comply with the established specifications.

### **“Machined Automatic Systems Programming”**

The holder:

- Identifies the components of a machined automated installation, analysing how they work and their position in the production systems.
- Prepares the programs of the components of an automated system analysing and applying the different types of programming.
- Organises and fine-tunes the components of an automated installation selecting and applying the required techniques or procedures.
- Controls and supervises automated systems analysing the process and adjusting the parameters of the system variables.

### **“Production Scheduling”**

The holder:

- Draws up manufacturing programmes analysing the productive capacities of facilities, their possible adaptations and procurement needs.
- Draws up maintenance plans and defines their control parameters, relating means requirements with the need of production.
- Manages the documentation used in the production scheduling, defining and applying an organisation plan and processing information.
- Monitors production relating control techniques with production requirements.
- Determines the plan for the procurement of necessary raw materials and components analysing procurement models.
- Manages the warehouse relating stock needs with storage, handling and internal distribution processes in accordance with production requirements.

### **“Manufacturing Processes Implementation”**

The holder:

- Organises the manufacturing processes implementation interpreting the specifications of the product and process sheets.
- Prepares and fine-tunes machinery, equipment and tools that intervene in the machining and fitting process applying the required techniques and procedures.
- Operates machinery and equipment that intervene in the machining and fitting process, relating how they work with the conditions of the process and the characteristics of the final product.
- Carries out the first-level maintenance of machinery and tools relating it with its functionality.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Quality Management, Labour Risk Prevention and Environmental Protection”**

The holder:

- Defines actions to make the implementation and maintenance of quality assurance systems easier, interpreting their basic concept and factors.
- Defines actions to make the implementation and maintenance of business excellence models easier, interpreting their basic concept and factors.
- Defines actions to make the implementation and maintenance of labour risk prevention systems easier, interpreting their basic concept and factors.
- Defines actions to make the implementation and maintenance of environmental management systems easier, interpreting their basic concept and factors.
- Recognises the main pollution sources that could arise from mechanical manufacturing companies describing the effects of the polluting agents on the environment.

### **“Products Verification”**

The holder:

- Determines control procedures, relating the dimensional characteristics of parts and manufacturing processes with the measuring frequency and tools.
- Plans the monitoring of the characteristics and properties of manufactured products, relating destructive and non-destructive testing equipment and machinery with the characteristics to be measured or verified.
- Calibrates measuring tools describing their systematic error-correcting procedures.
- Determines the quality assurance of products and process stability calculating statistical data for the monitoring of the product and process.

### **“Project on Mechanical Production Scheduling”**

The holder:

- Identifies the needs of the productive sector, relating them with the standard projects that may satisfy them.
- Designs projects related to the competences described in the diploma, including and developing their constituting stages.
- Plans the project implementation, determining the intervention plan and associated documentation.

- Defines the procedures for the monitoring and control of the project implementation, justifying the selection of variables and instruments used.

#### **“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 Mechanical Production Scheduling.

#### **“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:

- Identifies the company’s structure and organization, relating it to the production and marketing of the manufactured products.
- 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.
- Determines machining processes establishing the sequence and variables of the process from the requirements of the product to be manufactured.
- Prepares and fine-tunes machinery, equipment and tools that intervene in the manufacturing and fitting process applying the required techniques and procedures.
- Measures dimensions and verifies characteristics of the manufactured parts following the established instructions of the control plan.

### **RANGE OF OCCUPATIONS ACCESSIBLE TO THE HOLDER OF THE DIPLOMA**

The Higher Technician in Mechanical Production Scheduling works in metal transforming industries related with the sub-sectors focused on the manufacturing of machinery and mechanical equipment, electrical, electronic and optical material and equipment and transport material corresponding to the industrial sector.

The most relevant occupations or jobs are the following:

- Mechanics technician
- Metal processing facilities manager
- Manager of metal working machinery operators
- Fitters manager
- CNC programmer
- Mechanical production automated systems programmer
- Production programmer

## 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 1678/2007, of 14 December, according to which the diploma of Higher Technician in Mechanical Production Scheduling 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
Graphical Interpretation.	7
Definition of the Processes of Machining, Shaping and Fitting.	10
Machining Through Computer Numerical Controlled Machine Tools.	18
Computer-aided Manufacturing (CAM).	5
Machined Automatic Systems Programming.	9
Production Scheduling.	8
Manufacturing Processes Implementation.	9
Quality Management, Labour Risk Prevention and Environmental Protection.	9
Products Verification.	9
Project on Mechanical Production Scheduling.	5
Vocational Training and Guidance.	5
Business and Entrepreneurial Initiative.	4
On the Job Training.	22
	TOTAL CREDITS
	<b>120</b>
OFFICIAL DURATION (HOURS)	<b>2000</b>

\* 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

