

# EUROPASS DIPLOMA SUPPLEMENT

## TITLE OF THE DIPLOMA (ES)

*Técnico Superior en Sistemas de Telecomunicaciones e Informáticos*

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

*Higher Technician in Telecommunications and Computer Systems*

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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:**

Developing projects as well as managing and supervising the assembly and the maintenance of common telecommunication infrastructures and telecommunication systems and equipment such as broadband networks and fixed and mobile radio, electronic systems, audiovisual production and transmission, based on technical documentation, regulations and procedures, ensuring the performance, the quality, the safety and the environmental conservation.

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

### “Configuration of Telecommunication System Infrastructures”

The holder:

- Characterizes the facilities of common telecommunication infrastructures (CTI) for the capturing, adaptation and distribution of signals for radio and television (terrestrial and satellite broadcasts), analyzing the regulation and describing the function and the characteristics of the spaces, the equipment and the elements within it.
- Configures telecommunications infrastructures for the capturing, the adaptation and the distribution of signals for radio and television, performing calculations and drawing diagrams.
- Characterizes the common telecommunications infrastructure to access to the basic telephone service and integrated services digital networks, analyzing the rules and describing the function and the characteristics of the elements that comprise it.
- Configures network infrastructures for access to telephone service available to public, performing calculations and drawing diagrams.
- Characterizes the common telecommunications infrastructure for access to broadband telecommunication service, analyzing the rules and describing the function and characteristics of the elements that comprise it.
- Configures voice and data network infrastructures with structured cabling, analyzing the characteristics of the networks and developing schemes.
- Determines the characteristics of electrical installations for telecommunications systems, analyzing the system requirements and sizing the elements that comprise it.

### “Elements of Telecommunications Systems”

The holder:

- Characterizes telecommunications systems, identifying the subsystems that integrate it and analyzing its function in the set.
- Determines the characteristics of the transmission/reception antennas for radio frequency systems, analyzing typical parameters and identifying its applications.
- Evaluates the provisions of guided means of transmission, performing assembly, measurements and verifying its characteristics.
- Determines the quality of the signals in telecommunication transmission lines, applying measurement or visualization techniques and interpreting the values obtained.
- Evaluates the quality of the audio and video signals, using visualization or measurement techniques and interpreting its parameters.

### “Computer Systems and Local Networks”

The holder:

- Selects computer equipment, evaluating the requirements of the telecommunications system and defining the composition and characteristics of its elements.
- Configures computer equipments, examining the features required by the telecommunications system and installing hardware and software.
- Configures specific services and functions in the computer system, planning its implementation and taking into account the specifications of the telecommunications system.
- Integrates local area networks (LAN) in telecommunication systems, interpreting the system specifications and configuring physical and logical parts.

- Integrates wireless LAN (WLAN) in telecommunication systems, interpreting the system specifications and configuring physical and logical parts.
- Performs provision tests of computer systems or data networks, applying techniques of performance analysis and verifying their integration into the telecommunications system.
- Maintains computer systems and networks, applying diagnostic or monitored techniques and performing correcting dysfunctions.

#### **“Techniques and Processes in Telecommunication Infrastructures”**

The holder:

- Reconsiders infrastructure of telecommunications systems, interpreting building plans and schemes and relating cabling networks, equipment and items to its location.
- Assembles sets of signals collectors for radio and television for terrestrial and satellite broadcasts, interpreting drawings and assembly drawings and applying specific techniques.
- Assembles crucial equipment, describing the function of each element and applying specific techniques.
- Installs the elements of the distribution network for radio and television signals, interpreting drawings and diagrams of the structure and applying specific assembly techniques.
- Installs common telecommunication infrastructures for access to the telephone service available to the public (basic telephony through an integrated digital network services), interpreting drawings and diagrams, and applying specific assembly techniques.
- Installs infrastructure of broadband networks, interpreting drawings and diagrams of the structure and applying assembly techniques.
- Verifies the operation of telecommunications systems infrastructures, making measurements and contrasting them with standard parameters.
- Maintains infrastructure facilities of telecommunication systems, taking measurements and correcting breakdowns or malfunctions.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks, measures and equipment to prevent them.

#### **“Audiovisual Production Systems”**

The holder:

- Characterizes sound equipments, identifying its applications and analyzing its performance.
- Configures sound installations, defining its structure and selecting the elements that compose it.
- Characterizes imaging equipment, identifying its applications and analyzing its performance.
- Configures image installations, defining its structure and selecting the elements that compose it.
- Installs audio and video systems, interpreting drawings and diagrams and applying specific assembly techniques.
- Verifies the implementation of image and sound installations, taking measurements and configuring equipment.
- Maintains image and sound systems, making measurements and correcting breakdowns or malfunctions.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks, measures and equipment to prevent them.

#### **“Electronic networks”**

The holder:

- Configures routers, analyzing their function in communication networks and using specific commands and instructions.
- Implements virtual local access networks (VLAN), justifying their use and setting switches.
- Implements the access to wide area networks (WAN), configuring the connection devices.
- Verifies the commissioning of telematics network, taking measurements and applying certification criteria.
- Applies techniques of network security, identifying the most common threats and setting up system resources for protection.
- Maintains electronic networks, applying procedures of measuring or monitoring and relating malfunctions or breakdowns to its causes.

#### **“Radiocommunication Systems”**

The holder:

- Characterizes transmission systems for radio and television, identifying its applications and analyzing its operation.
- Configures fixed installations and mobile units to transmit radio and television signals, defining its structure and selecting the elements that compose it.
- Installs systems to transmit radio and television signals, interpreting drawings and diagrams and applying specific assembly techniques.
- Verifies the operation of emission and transmission systems by taking measurements of the significant parameters and configuring the equipment.
- Maintains systems for the transmission and broadcasting of radio and television signals, making measurements and correcting breakdowns or malfunctions.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks, the measures and the equipment to prevent them.

### **“Integrated Systems and Digital Home”**

The holder:

- Characterizes the digital home infrastructure (DHI), examining the areas that comprise it and distinguishing the services to be provided.
- Integrates multimedia and network communication systems, managing services and controlling the operation of devices and equipment.
- Installs security systems, verifying its integration and examining its functionality.
- Integrates CCTV systems, access control and intelligent video, verifying the installation, interconnection of the elements and managing communications equipment and servers.
- Integrates automation devices, controlling the operation of systems and equipment and managing equipments and servers of network control.
- Maintains integrated digital home systems, planning actions and relating them to malfunctions or breakdowns.
- Complies with the rules on labour risk prevention and environmental protection, identifying the associated risks, the measures and the equipment to prevent them.

### **“Management of Projects of Telecommunication Installations”**

The holder:

- Identifies technical and administrative documentation of facilities, analyzing projects and interpreting information in each document.
- Develops plans and diagrams of telecommunication installations, responding to the configuration of the facility and managing application software.
- Develops budgets of telecommunication installations, considering a list of materials, scales and applying unit prices.
- Plans the provisioning for installation and maintenance of telecommunication facilities, analyzing the requirements of the installation and technical documentation.
- Plans installation of telecommunications facilities, analyzing and defining assembly plans implementation phases.
- Develops manuals and documents attached to projects of telecommunications facilities, defining procedures for forecasting, performance and control.
- Plans the maintenance of telecommunication facilities, identifying needs and developing maintenance and waste management programmes.
- Applies management techniques of assembly and maintenance of telecommunication installations, analyzing assembly plans and safety studies.

### **“Systems of Fixed and Mobile Telephony”**

The holder:

- Configures conventional private telephone systems, identifying services and selecting equipment and elements.
- Configures systems of Voice over IP, determining services and selecting equipment and elements.
- Characterizes radiocommunication systems for telephony, identifying its structure and analyzing the operation of the equipment within it.
- Installs base stations, interpreting drawings and diagrams, applying specific assembly techniques and configuring equipment.
- Installs phone systems, integrating technologies and services and setting up their equipment and items.
- Verifies the implementation of telephone facilities, making measurements and configuring communications equipment.
- Maintains telephone systems, taking measurements and correcting breakdowns or malfunctions.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks, measures and equipment to prevent them.

### **“Project on Telecommunications and Computer Systems”**

The holder:

- Identifies the needs of the production sector, relating them to similar 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 the 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 the risks derived from his/her activity, analysing the job conditions and risk factors present in his/her labour setting.
- Participates in the development of a risk prevention plan for a small enterprise, identifying the responsibilities of all the agents involved.
- Applies protection and prevention measures, analysing risk situations in the labour setting of the Higher Technician in Telecommunications and Computer Systems.

### **“Business and Entrepreneurial Initiative”**

The holder:

- Recognizes 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 its 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 structure and organization of the company, relating them to the production and the marketing of the products obtained.
- Applies ethical and work habits in the development of his/her profession, according to the characteristics of the job and the procedures established by the company.
- Determines the characteristics of the facilities based on a draft or given conditions, applying regulations and relevant regulations.
- Plans the assembly of facilities, establishing stages and distributing resources, based on technical documentation project.
- Supervises the installation of facilities and/or systems, working in their execution and respecting the safety and quality protocols established by the company.
- Performs the implementation of facilities and equipment, supervising and assisting in their implementation, and following the established procedures.
- Controls the maintenance operations of facilities, working in their execution in order to verify the compliance with programme objectives and optimization of available resources.
- Supervises the repair of breakdowns and malfunctions in equipment and facilities, collaborating in the execution and implementation of technical applications and corrective maintenance procedures.

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

The Higher Technician in Telecommunications and Computer Systems works in companies of the service sector, both private and public, dedicated to telecommunications, systems integration, broadband networks, electronics and media, as project developer, systems integrator and supervisor of the installation and maintenance of installations and infrastructures, either as an employee or self-employed.

The most relevant occupations or jobs are the following:

- Assistant designer in telecommunication installations for homes and buildings.
- Assembly supervisor of telecommunication installations for homes and buildings.
- Technician in verification and control of telecommunication equipment and installations.
- Specialist in installation, integration and maintenance of telecommunications equipment and systems.
- Site manager in telecommunication installations.
- Technician in supervision, installation, testing and control of equipment systems in radio and television production studios and audiovisual production systems.
- Technician in supervision, installation, maintenance, testing and control of equipment broadcasting systems.
- Technician in supervision, installation, maintenance, testing and control of equipment and electronic security systems CCTV.
- Technician in supervision, installation, maintenance, verification and monitoring of local networks and electronic systems.
- Technician in supervision, installation, maintenance, monitoring and control in radio-relay systems.
- Specialist in integration, installation and maintenance of hardware and software systems.

## 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 883/2011, of 24 June, according to which the diploma of Higher Technician in Telecommunications and Computer Systems 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
<b>Configuration of telecommunications system infrastructure.</b>	8
<b>Elements of telecommunications systems.</b>	8
<b>Computer systems and local networks.</b>	11
<b>Processes and techniques in telecommunication infrastructures.</b>	8
<b>Audiovisual production systems.</b>	10
<b>Telematic networks.</b>	9
<b>Radiocommunication systems.</b>	9
<b>Integrated systems and digital home.</b>	7
<b>Project management of telecommunication installations.</b>	6
<b>Systems of fixed and mobile telephony.</b>	8
<b>Project on Telecommunications and Computer Systems.</b>	5
<b>Vocational Training and Guidance.</b>	5
<b>Business and Entrepreneurial Initiative.</b>	4
<b>On the Job Training.</b>	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

