

# EUROPASS DIPLOMA SUPPLEMENT

## TITLE OF THE DIPLOMA (ES)

*Técnico Superior en Imagen para el Diagnóstico y Medicina Nuclear*

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

*Higher Technician in Diagnostic Imaging and Nuclear Medicine*

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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:**

Obtaining graphic, morphological or functional records of the human body, with diagnosis and therapeutical purposes, from medical prescription, using equipment for diagnostic imaging and nuclear medicine, and attending patients during their stay in the unit, applying protocols of radioprotection and quality assurance, as well as those protocols established in the health care unit.

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

### “Patient Care”.

The holder:

- Identifies the area of work, relating it to the structure of the health sector.
- Applies patient reception protocols in the diagnostic or treatment unit according to the action plan to be developed.
- Applies communication and psychological support techniques, identifying individuals' characteristics.
- Observes physical and clinical parameters, relating them to the patient's general condition.
- Carries out the procedures to prepare the patient for the application of the examination technique or the treatment prescribed, acting in accordance with the protocol described by the unit.
- Solves eventualities in equipment or devices worn by the patient, according to the examination technique and the protocol of the unit.
- Applies techniques for the administration of contrasts and radiopharmaceuticals, relating them to the route of administration according to the protocol of the unit.
- Applies guidelines on infectious disease prevention and protection, identifying risks and preventive measures.

### “Physical Foundations and Equipment”.

The holder:

- Determines the characteristics of ionizing and non-ionizing radiations and matter waves, describing their diagnostic and therapeutical use.
- Characterises the equipment of conventional radiology, identifying components and applications.
- Processes radiographic images, describing characteristics and applications of receptors.
- Characterises computed tomography (CT) equipment, identifying components and applications.
- Characterises magnetic resonance (MR) equipment, identifying components and applications.
- Characterises ultrasonography equipment, identifying components and applications.
- Carries out tasks for managing health data, diagnostic images and therapeutical treatments, interpreting clinical information standardization.

### “Anatomy through Images”.

The holder:

- Locates anatomical structures, applying conventional systems of body topography.
- Analyses clinical images, relating reading protocols to the technique used.
- Recognizes the anatomical structures of the musculoskeletal system, interpreting diagnostic images.
- Identifies the structure, the operation and the diseases of the nervous system and the sense organs, relating them to diagnostic images.
- Recognizes the structure, the operation and the diseases of the cardiovascular and respiratory systems, relating them to diagnostic images.
- Identifies the structure, the operation and the diseases of the digestive and urinary systems, relating them to diagnostic images.
- Recognizes the structure, the operation and the diseases of the endocrine and metabolic system and the reproductive system, relating them to diagnostic images.

### **“Radiation Protection”.**

The holder:

- Applies procedures for radiation detection, associating them with surveillance and control of internal and external radiation.
- Describes in detail the interaction between ionizing radiations and the biological medium, describing the effects that these radiations produce.
- Applies protocols for operational radiation protection, based on general protection criteria and types of exposure.
- Characterises medical radiation facilities of nuclear medicine, radiotherapy and radiodiagnosis, identifying radiation risks.
- Applies management procedures of radioactive material, associating operational protocols with the type of installation.
- Defines actions for applying the quality assurance plan, relating it to each area and type of radiation facility.
- Applies emergency plans in radiation facilities, identifying radiation accidents.

### **“Simple Radiology Techniques”.**

The holder:

- Carries out the preparation for the study of simple radiographies, selecting the equipment and materials required.
- Carries out techniques for radiological examinations of the upper limb and the shoulder girdle, applying the protocols required.
- Carries out techniques for radiological examinations of the lower limb and the pelvic girdle, applying the protocols required.
- Carries out techniques for radiological examinations of the spinal column, sacrum and coccyx, applying the protocols required.
- Carries out techniques for radiological examinations of the bony and visceral thorax and the abdomen, applying the protocols required.
- Carries out techniques for radiological examinations of the head and the neck, applying the protocols required.

### **“Special Radiology Techniques”.**

The holder:

- Describes the performance of radiological examinations of the digestive system, using the protocols established.
- Describes the performance of radiological examinations of the genitourinary system, using the protocols established.
- Obtains radiology images of the vascular system, interventional procedures and samplings, using examination protocols.
- Carries out mammographies, using the protocols established.
- Carries out intraoral radiological examinations and dental panoramic radiography examinations, using the protocols established.
- Carries out radiological examinations by means of surgical portable and mobile equipment, using the protocols established.
- Carries out bone densitometries, using the protocols established.

### **“Techniques for Computed Tomography and Echography”.**

The holder:

- Prepares the examination, interpreting the control procedures established.
- Applies techniques for the administration of contrast media, according to the specific protocol of the unit, identifying the types and their directions for use.
- Carries out the examination by following specific protocols of the unit, interpreting procedures established by them.
- Obtains high quality images, applying post-processing techniques.
- Identifies the clinical use of ultrasounds, analysing the characteristics of the image.
- Applies techniques for echographic examination by following the protocols established, interpreting the procedures established by them.

### **“Techniques for Magnetic Resonance Imaging”.**

The holder:

- Prepares the examination, applying the control procedures established.
- Applies techniques for the administration of contrast media, according to the specific protocol of the unit, identifying the types and their directions for use.
- Carries out magnetic resonance tests, interpreting the examination protocols established.
- Applies any necessary adjustment, obtaining high quality images.
- Identifies risks associated with the acquisition of magnetic resonance images, suggesting preventive and control measures.
- Characterises functional and interventionist magnetic resonance tests, relating them to the studies requested.

### **“Imaging Techniques in Nuclear Medicine”.**

The holder:

- Defines the field of action in nuclear medicine, relating the radionuclides to their medical applications.
- Determines the operational parameters of the equipment for image acquisition, describing its structure and operation.
- Determines the tune-up procedure of the equipment and material required, interpreting operational protocols.
- Applies the protocols established for the performance of examinations, characterising the type of study and the procedure for image acquisition.
- Describes the process for image record, applying programs for study processing.
- Checks the quality and suitability of the image obtained, relating it to normal patterns and other supplementary studies.

### **“Radiopharmacy Techniques”.**

The holder:

- Applies the procedure to obtain radiopharmaceuticals used in examinations, identifying the production and obtaining process.
- Determines the labelling procedure of radiopharmaceuticals, relating the radionuclide to the chemical vector.
- Applies radioimmunoassay techniques, interpreting analytical procedures.
- Prepares radioisotope treatment, relating the isotope to the pathologies to be treated.
- Establishes the measures that need to be adopted in the unit of radiometabolic treatment, identifying the types and facilities of metabolic therapy.

### **“Project on Diagnostic Imaging and Nuclear Medicine”.**

The holder:

- Identifies the needs of the production sector, relating them to 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 Diagnostic Imaging and Nuclear Medicine.

### **“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 structure and organization of the company, relating it to the type of service provided.
- Applies ethical and work habits in the development of his/her professional activity, according to the characteristics of the job and the procedures established by the enterprise.
- Provides technical health care to patients during their stay in the unit of diagnostic imaging and nuclear medicine.
- Carries out radiology examinations, using contrasts and selecting appropriate equipment, material and accessories for the patient's request and characteristics.

- Carries out examinations by means of computed tomography equipment, and cooperates when carrying out an echography, according to the protocols of the unit.
- Carries out examination by means of magnetic resonance equipment, following the protocols established.
- Obtains medical images by means of nuclear medicine equipment, using radiopharmaceuticals and following the protocols established for each examination.
- Applies radiation protection procedures, based on the installation and the radiation sources.

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

The Higher Technician in Diagnostic Imaging and Nuclear Medicine works in the public and private health sector, in units of radiodiagnosis and nuclear medicine, in research centres, institutes of legal medicine and forensic sciences, as well as in veterinary and animal testing centres, and hospital and pharmaceutical sales representatives, chemists and technicians in electromedicine applications.

S/He works under the supervision of the corresponding medical specialist and the supervisor of the facilities, with the corresponding accreditation of radiation installations operator - awarded by the Spanish Nuclear Safety Council.

Her/His professional activity is regulated by the State Health Administration.

The most relevant occupations or jobs are the following:

- Higher Technician in Diagnostic Imaging.
- Expert technician in radiodiagnosis.
- Expert technician in nuclear medicine.
- Technical staff of equipment of medical radioelectrology.
- Technical staff in radiation protection.
- Technical staff in research and experimentation radiology.
- Hospital and pharmaceutical sales representative.

### **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 (EQF 5).

**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 770/2014, of 12 September, according to which the diploma of Higher Technician in Diagnostic Imaging and Nuclear Medicine 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**

<b>PROFESSIONAL MODULES IN THE DIPLOMA ROYAL DECREE</b>	<b>CREDITS ECTS</b>
<b>Patient Care.</b>	9
<b>Physical Foundations and Equipment.</b>	13
<b>Anatomy through Images.</b>	13
<b>Radiation Protection.</b>	9
<b>Simple Radiology Techniques.</b>	8
<b>Special Radiology Techniques.</b>	6
<b>Techniques for Computed Tomography and Echography.</b>	7
<b>Techniques for Magnetic Resonance Imaging.</b>	6
<b>Imaging Techniques in Nuclear Medicine.</b>	7
<b>Radiopharmacy Techniques.</b>	6
<b>Project on Diagnostic Imaging and Nuclear Medicine.</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>
<b>OFFICIAL DURATION (HOURS)</b>	<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

