

# EUROPASS DIPLOMA SUPPLEMENT TO HIGHER TECHNICAL VOCATIONAL TRAINING

## TITLE OF THE DIPLOMA (ES)

*Técnico Superior en Desarrollo de Aplicaciones Multiplataforma*

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

*Higher Technician in Multi-platform Applications Development*

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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, installing, documenting and maintaining multi-platform computer applications, using technologies and specific development environments, guaranteeing secure access to data and complying with «usability» and quality criteria required by established standards.

**Within this framework, the holder will have acquired the following LEARNING OUTCOMES in each PROFESSIONAL MODULE:**

### “Computer Systems”

The holder:

- Assesses computer systems identifying their components and characteristics.
- Installs operating systems planning the process and interpreting technical documentation.
- Manages the system information identifying storage structures and applying measures to ensure data integrity.
- Manages operating systems using commands and graphical tools and assessing the system needs.
- Interconnects network systems configuring devices and protocols.
- Works with network systems managing their resources and identifying existing security restrictions.
- Writes documentation assessing and using general purpose computer applications.

### “Databases”

The holder:

- Recognises the elements of databases analysing their functions and assessing the usefulness of management systems.
- Creates databases defining their structure and the characteristics of their elements according to the relational model.
- Checks the stored information using wizards, graphic tools and data manipulation language.
- Changes the stored information using wizards, graphic tools and the data manipulation language.
- Develops stored procedures assessing and using the language statements included in the database management system.
- Designs normalized relational models interpreting entity-relationship model.
- Manages the information stored in object-relational databases, assessing and using the possibilities provided by the management system.

### “Programming”

The holder:

- Recognises the structure of a computer program, identifying and relating the elements of the programming language used.
- Writes and tests simple programs, recognising and applying the basics of object-oriented programming.
- Writes and debugs codes, analysing and using the control structure of language.
- Develops programs organised into classes analysing and applying the principles of object-oriented programming.
- Performs operations of information input and output, using specific procedures of language and class libraries.
- Writes programs that manipulate information selecting and using advanced types of data.

- Develops programs applying advanced characteristics of object-oriented languages and programming environment.
- Uses object-oriented databases, analysing their characteristics and applying techniques to maintain the information persistence.
- Manages information stored in relational databases maintaining the data integrity and consistence.

### **“Markup Language and Information Management Systems”**

The holder:

- Recognises the characteristics of the markup language analysing and interpreting code fragments.
- Uses markup languages for the transmission of information through the web analysing the structure of documents and identifying their elements.
- Creates content channels analysing and using syndication technologies.
- Establishes validation mechanisms for XML documents using methods to define their syntax and structure.
- Carries out conversions of XML documents using processing techniques and tools.
- Manages information in XML format analysing and using storage technologies and query languages.
- Works with business information management systems carrying out tasks of import, integration, assurance and extraction of information.

### **“Development Environments”**

The holder:

- Identifies the elements and tools that intervene in the development of a computer program, analysing their features and phases that must be followed until final release.
- Assesses integrated development environments analysing their characteristics in order to edit source code and generate executable files.
- Verifies that programs are operative designing and carrying out tests.
- Optimises codes using available tools in the development environment.
- Generates class diagrams assessing their importance in the development of applications and using available tools in the environment.
- Generates behaviour diagrams assessing their importance in the development of applications and using available tools in the environment.

### **“Data Access”**

The holder:

- Develops applications that manage information stored in files identifying their application field and using specific classes.
- Develops applications that manage information stored in relational databases identifying and using connection mechanisms.
- Manages data persistence identifying object-relational mapping (ORM) tools and developing applications that make use of them.
- Develops applications that manage information stored in object-relational and object-oriented databases assessing their characteristics and using access mechanisms.
- Develops applications that manage information stored in native XML databases assessing and using specific classes.
- Programs components to access data identifying the characteristics a device must have and using development tools.

### **“Interface Development”**

The holder:

- Generates graphical user interfaces through visual editors using their functionalities and adapting the generated code.
- Generates XML-based graphical user interfaces using specific tools and adapting the generated XML document.
- Creates visual components assessing and using specific tools.
- Designs graphical interfaces identifying and applying usability criteria.
- Writes reports assessing and using graphical tools.
- Documents applications selecting and using specific tools.
- Prepares applications for distribution assessing and using specific tools.
- Assesses how applications work designing and carrying out tests.

### **“Multimedia Programming and Mobile Devices”**

The holder:

- Applies development technologies for mobile devices assessing their features and capacities.
- Develops applications for mobile devices analysing and using specific technologies and libraries.

- Develops programs that integrate multimedia contents analysing and using specific technologies and libraries.
- Selects and tests game engines analysing the 2D and 3D game architecture.
- Develops simple 2D and 3D games using game engines.

#### **“Services and Processes Programming”**

The holder:

- Develops applications made up of different processes recognising and applying principles of parallel programming.
- Develops applications made up of different threads of execution analysing and applying specific libraries of programming language.
- Programs network communications mechanisms using sockets and analysing the execution scenarios.
- Develops applications that provide network services, using class libraries and applying efficiency and availability criteria.
- Protects applications and data defining and applying security criteria to access, store and transmit information.

#### **“Business Management Systems”**

The holder:

- Identifies enterprise resource planning and customer relationship management (ERP-CRM) systems identifying their characteristics and verifying the configuration of the computer system.
- Implements ERP-CRM systems interpreting technical documentation and identifying the different options and modules.
- Performs management and information query operations following design specifications and using the tools provided by the ERP-CRM systems.
- Adapts ERP-CRM systems identifying requirements of a specific business and using the tools they provide.
- Develops components for an ERP-CRM system analysing and using the incorporated programming language.

#### **“Project on Multi-platform Applications Development”**

The holder:

- Identifies the needs of the production 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 getting back into the world of work, 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 protection 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 Multi-platform Applications Development.

#### **“Business and Entrepreneurial Initiatives”**

The holder:

- Recognises skills related to entrepreneurial initiatives, 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:

- Selects job opportunities, identifying the different possibilities of getting back into the world of work, and the alternatives of lifelong learning.
- Applies labour and ethic habits in the development of his/her professional activity according to the characteristics of the job position and the procedures established by the company.
- Organises work to be carried out, identifying allocated tasks through project planning and interpreting specific documentation.
- Manages and uses computer systems and development environments, assessing their requirements and characteristics according to purpose of use.
- Participates in the development of data access applications planning the database structure and assessing the reach and repercussion of transactions.
- Intervenes in the development of games, multimedia applications and mobile devices applications using specific tools and languages and complying with the established requirements and specifications.
- Collaborates in the development and test of multiplatform applications, from the interface to the process and services programming, including packing and distribution, as well as associated help and documentation.
- Participates in the process of deployment and adaptation of resource management systems and enterprise planning (ERP-CRM) analysing their characteristics and assessing changes.

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

A Higher Technician in Multi-platform Applications Development works in public or private companies, either as a self-employed or employee, carrying out his/her tasks in the area of multi-platform computer applications development in different fields: business management, relationships with customers, education, leisure time, mobile devices and entertainment, among others; applications developed and deployed in intranet, extranet and internet environments; deployment and adaptation of enterprise resource planning and customer relationship management.

The most relevant occupations or jobs are the following:

- Developing computer applications for business management
- Developing general purpose applications
- Developing applications in the field of entertainment and mobile computing

### 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 \_\_\_\_\_ of the European Qualifications Framework (EQF\_\_).

**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 450/2010 of 16 April, according to which the diploma of Higher Technician in Multi-platform Applications Development 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>MINIMUM HOURS*</b>	<b>CREDITS ECTS</b>
<b>Computer Systems.</b>	100	10
<b>Databases.</b>	105	11
<b>Programming.</b>	135	14
<b>Markup Language and Information Management Systems.</b>	70	7
<b>Development Environments.</b>	50	6
<b>Data Access.</b>	80	9
<b>Interface Development.</b>	80	9
<b>Multimedia Programming and Mobile Devices.</b>	55	7
<b>Services and Processes Programming.</b>	40	5
<b>Business Management Systems.</b>	55	6
<b>Project on Multi-platform Applications Development.</b>	25	5
<b>Vocational Training and Guidance.</b>	50	5
<b>Business and Entrepreneurial Initiative.</b>	35	4
<b>On the Job Training.</b>	220	22
	TOTAL HOURS	TOTAL CREDITS
	<b>1100</b>	<b>120</b>
<b>OFFICIAL DURATION</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 EDUCATIONAL SYSTEM