Postgraduate Diploma
Free Software and Software Reuse

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Postgraduate Diploma

Free Software and Software Reuse

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **18 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-free-software-software-reuse

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01

Introduction

Develop your skills and knowledge in Free Software and Software Reuse, with this high-level specialization taught by industry experts. Therefore, you will learn the latest techniques and innovations in software, in a practical and rigorous way, 100% online.

This Postgraduate Postgraduate Diploma will allow you to update your knowledge in Human Software and Software Reuse in a practical way, 100% online, without renouncing to the maximum educational rigor”

This program is aimed at those interested in attaining a higher level of knowledge of Medieval and Reuse Software History. The main objective of this Postgraduate Diploma is for students to specialize their knowledge in simulated work environments and conditions in a rigorous and realistic manner so that they can later apply it in the real world.

This program will prepare scientifically and technologically, as well as to develop the professional practice of software engineering, with a transversal and versatile approach adapted to the new technologies and innovations in this field. Students will gain extensive knowledge in Introduction to Software Engineering from professionals in the field.

The Postgraduate Diploma will be able to take the opportunity and study this program in a 100% online format, without neglecting their obligations. You should up to date your knowledge and get your University Expert degree to continue growing personally and professionally.

This **Postgraduate Diploma in Free Software and Software Reuse** contains the most complete and up-to-date program on the market. The most important features include:

- Development of 100 simulated scenarios presented by experts in Software Development
- Its graphic, schematic and practical contents, with which they are conceived, gather scientific and practical information on Software and Reuse
- News on the latest developments in Software and Reuse
- It contains practical exercises where the self-assessment process can be carried out to improve learning
- Interactive learning system based on the case method and its application to real practice
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Learn the latests techniques and strategies with this program and achieve the sucess as an IT Engineer”

Learn about Introduction to Software Engineering with this intensive program, from the comfort of your home”

Make the most of the latest educational technology to update on Software Engineering without leaving home.

Learn about the latest techniques in Introduction to Software Engineering from experts in the field.

It includes in its teaching staff professionals belonging to the field of education, who bring to this program their work experience, in addition to recognized specialists belonging to reference societies and prestigious universities.

Thanks to its multimedia content developed with the latest educational technology, they will allow the professional a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to prepare in real situations.

The program design is based on Problem-Based Learning, through which teachers must try to solve the different professional practice situations that arise throughout the course. To do so, the professional will be assisted by an innovative interactive video system created by recognized experts in Software and Reuse with extensive teaching experience.

02

Objectives

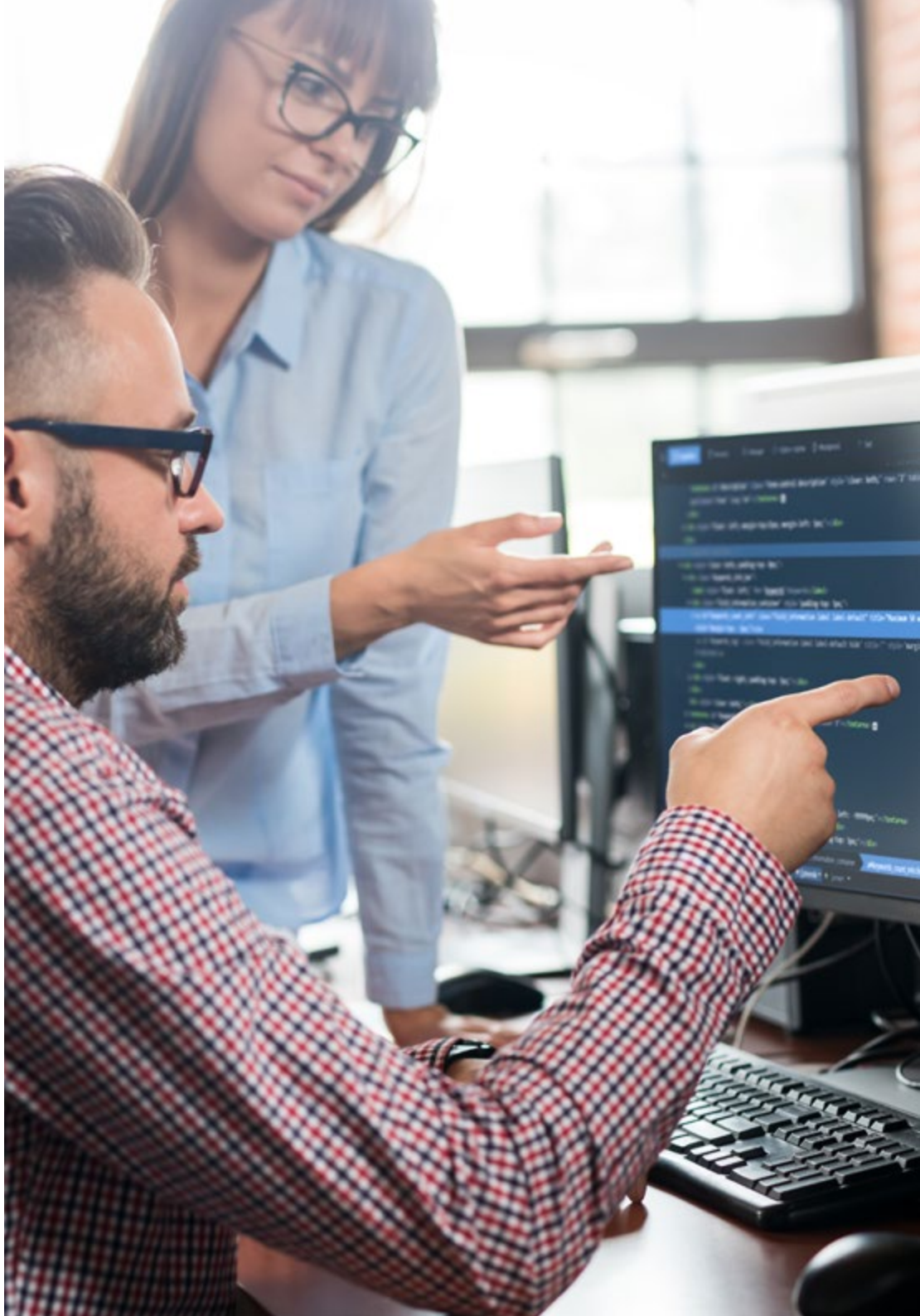
The objective of this program is to provide IT professionals with the knowledge and skills necessary to carry out their activity using the most advanced protocols and techniques of the moment. Through a work approach that is totally adaptable to the students, this Postgaduate Diploma will progressively lead them to acquire the competencies that will propel them to a higher professional level.

Achieve the level of knowledge you desire and master the fundamental concepts in Introduction to Software Engineering with this high-level educational program"

General Objectives

- Prepare scientifically and technologically, as well as to develop the professional practice of software, with a transversal and versatile approach adapted to the new technologies and innovations in this field
- Obtain wide knowledge in the field of software engineering, structure of computation and in Computer Software and Reuse including the mathematical, statistical and physical basis essential in La Information Technology

Enroll in the best program in Introduction to Software Engineering of the university scenario today"



Specific Objectives

Module 1. Free Software and Open Knowledge

- Learn the concepts of Free Software and Open Knowledge, as well as the different types of associated licenses
- Know the main free tools available in different areas such as operating systems, business management, content management systems and multimedia content creation, among others
- Understand the importance and benefits of free software in the business world, both for its features and costs
- Delve into the knowledge of the GNU/Linux operating system, as well as the different existing distributions, and how you can make custom adaptations of them
- Learn about the operation and development of WordPress, given that this CMS accounts for more than 35% of the active websites in the world, and more than 60% in the particular case of CMSs
- Understand how the operating system for Android mobile devices works, as well as the basics for the development of mobile applications: both native development and with cross-platform frameworks

Module 2. Software Reuse

- Know the big picture in software reuse strategy
- Learn the different patterns related to software reuse, both in terms of design, creation, structure and behavior
- Learn about the concept of framework, as well as to the main types such as those for graphical user interface design, web application development and object persistence management in databases
- Understand the current widely used Model View Controller (MVC) pattern

Module 3. Development of Web Applications

- Know the characteristics of the HTML markup language and its use in web creation together with CSS style sheets
- Learn how to use the browser-oriented programming language JavaScript, and some of its main features
- Understand the concepts of component-oriented programming and the component architecture
- Learn how to use the Bootstrap front-end framework for website design
- Understand the structure of the model in the development of dynamic web sites
- Know the service-oriented architecture and the basics of the HTTP protocol

03

Structure and Content

The structure of the contents has been designed by a team of IT engineering professionals, aware of the relevance of current preparation in order to delve into this area of knowledge , in order to humanistically enrich the students and raise the level of knowledge in software and Reuse Software History through the latest educational technologies available.

This Postgraduate Diploma in Free Software and Software Reuse contains the most complete and up-to-date of learning program on the market"

Module 1. Free Software and Open Knowledge

1.1. Introduction to Free Software
- 1.1.1. History of Free Software
- 1.1.2. "Freedom" in Software
- 1.1.3. Licenses for the Use of Software Tools
- 1.1.4. Intellectual Property of Software
- 1.1.5. What is the Motivation for Using Free Software?
- 1.1.6. Free Software Myths
- 1.1.7. Top500

1.2. Open Knowledge and CC Licenses
- 1.2.1. Basic Concepts
- 1.2.2. Creative Commons Licenses
- 1.2.3. Other Content Licenses
- 1.2.4. Wikipedia and Other Open Knowledge Projects

1.3. Main Free Software Tools
- 1.3.1. Operating Systems
- 1.3.2. Office Applications
- 1.3.3. Business Management Applications
- 1.3.4. Web Content Managers
- 1.3.5. Multimedia Content Creation Tools
- 1.3.6. Other Applications

1.4. The Company: Free Software and its Costs
- 1.4.1. Free Software Yes or No?
- 1.4.2. Truths and Lies about Free Software
- 1.4.3. Business Software Based on Free Software
- 1.4.4. Software Costs
- 1.4.5. Free Software Models

1.5. The GNU/Linux Operating System
- 1.5.1. Architecture
- 1.5.2. Basic Directory Structure
- 1.5.3. File System Characteristics and Structure
- 1.5.4. Internal Representation of the Files

1.6. The Android Mobile Operating System
- 1.6.1. History
- 1.6.2. Architecture
- 1.6.3. Android Forks
- 1.6.4. Introduction to Android Development
- 1.6.5. Frameworks for Mobile Application Development

1.7. Website Creation with WordPress
- 1.7.1. WordPress Features and Structure
- 1.7.2. Creation of Sites on WordPress.com
- 1.7.3. Installation and Configuration of WordPress on your own Server
- 1.7.4. Installing Plugins and Extending WordPress
- 1.7.5. Creation of WordPress Plugins
- 1.7.6. WordPress Theme Creation

1.8. Free Software Trends
- 1.8.1. Cloud-Based Environments
- 1.8.2. Monitoring Tools
- 1.8.3. Operating Systems
- 1.8.4. Big Data and Open Data 2.0
- 1.8.5. Quantum Computing

1.9. Version Control
- 1.9.1. Basic Concepts
- 1.9.2. Git
- 1.9.3. Cloud and Self-hosted Git Services
- 1.9.4. Other Version Control Systems

1.10. Custom GNU/Linux Distributions
- 1.10.1. Main Distributions
- 1.10.2. Distributions Derived from Debian
- 1.10.3. Deb Package Creation
- 1.10.4. Modification of the Distribution
- 1.10.5. ISO Image Generation

Module 2. Software Reuse

2.1. General Overview of the Software Reuse
- 2.1.1. What is Software Reuse?
- 2.1.2. Advantages and Disadvantages of Software Reuse
- 2.1.3. Main Techniques of Software Reuse

2.2. Introduction to Design Patterns
- 2.2.1. What is a Design Patterns?
- 2.2.2. Catalog of the Main Design Patterns
- 2.2.3. How to Use Patterns to Solve Design Problems?
- 2.2.4. How to Select the Best Design Pattern?

2.3. Creation Patterns I
- 2.3.1. Creation Patterns
- 2.3.2. Abstract Factory Pattern
- 2.3.3. Example of Abstract Factory Pattern implementation
- 2.3.4. Builder Pattern
- 2.3.5. Builder Implementation Example
- 2.3.6. Abstract Factory Pattern vs. Builder

2.4. Creation Patterns II
- 2.4.1. Factory Method Pattern
- 2.4.2. Factory Method vs Abstract Factory
- 2.4.3. Singleton Pattern

2.5. Structural Patterns
- 2.5.1. Structural Patterns
- 2.5.2. Adapter Pattern
- 2.5.3. Bridge Pattern

2.6. Structural Patterns II
- 2.6.1. Composite Pattern
- 2.6.2. Decorator Pattern

2.7. Structural Patterns III
- 2.7.1. Facade Pattern
- 2.7.2. Proxy Pattern

2.8. Behavioral Patterns
- 2.8.1. Concept of Behavioral Patterns
- 2.8.2. Behavior Pattern: Chain of Responsibility
- 2.8.3. Behavior Pattern Order

2.9. Behavioral Patterns II
- 2.9.1. Interpreter Pattern
- 2.9.2. Iterator Pattern
- 2.9.3. Observer Pattern
- 2.9.4. Strategy Pattern

2.10. Frameworks
- 2.10.1. Concept of Framework
- 2.10.2. Development using Frameworks
- 2.10.3. Model View Controller Pattern
- 2.10.4. Framework for Graphical User Interface Design
- 2.10.5. Frameworks for Web Application Development
- 2.10.6. Frameworks for Managing Object Persistence in Databases

Module 3. Development of Web Applications

3.1. HTML5 Markup Languages
- 3.1.1. HTML Basics
- 3.1.2. New HTML 5 Elements
- 3.1.3. Forms: New Controls

3.2. Introduction to CSS Style Sheets
- 3.2.1. First Steps with CSS
- 3.2.2. Introduction to CSS3

3.3. Browser Scripting Language: JavaScript
- 3.3.1. JavaScript Basics
- 3.3.2. DOM
- 3.3.3. Events
- 3.3.4. JQuery
- 3.3.5. Ajax

3.4. Concept of Component-Oriented Programming
- 3.4.1. Context
- 3.4.2. Components and Interfaces
- 3.4.3. States of a Component

3.5. Component Architecture
- 3.5.1. Current Architectures
- 3.5.2. Component Integration and Deployment

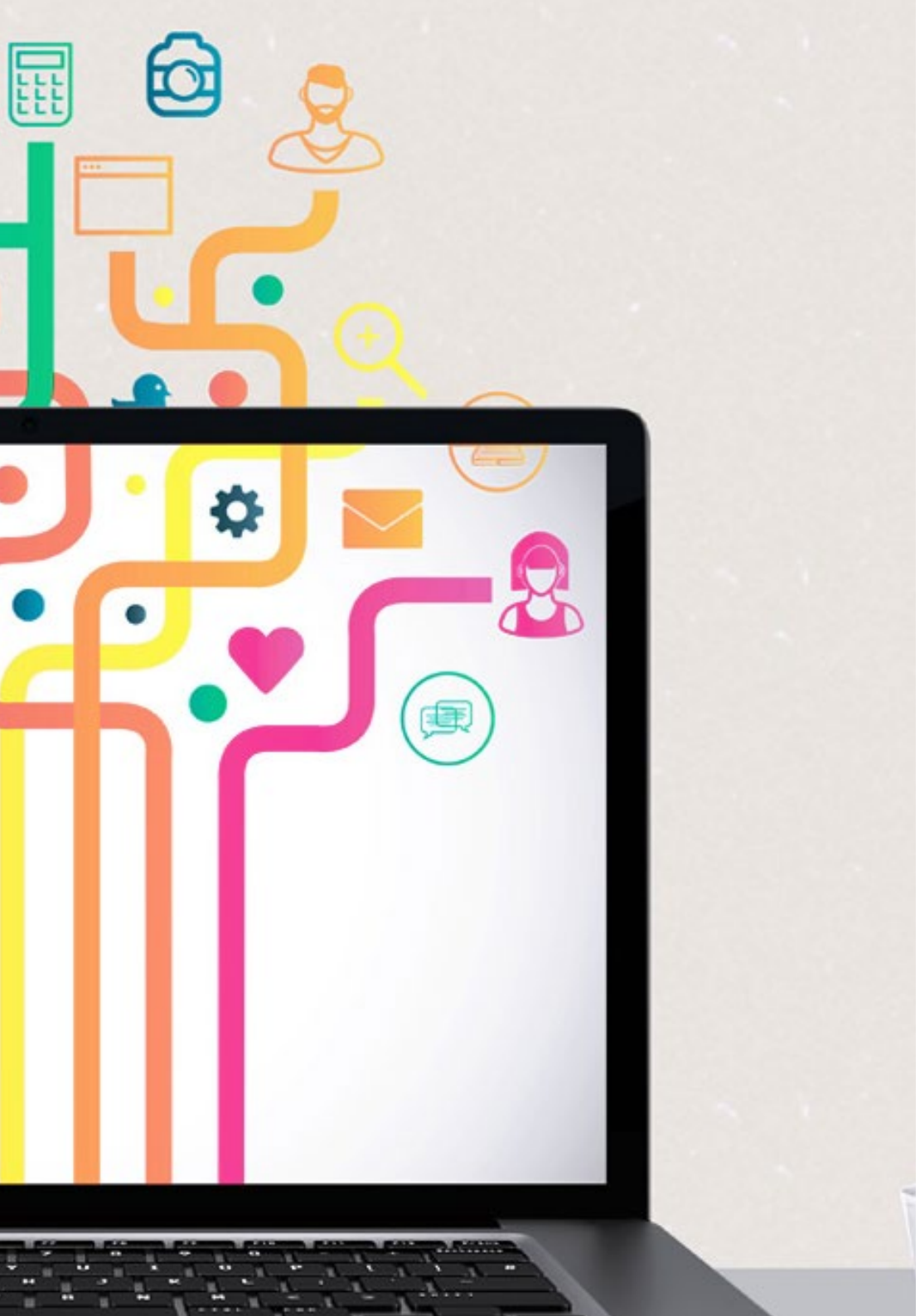
3.6. Framework Front-End: Bootstrap
- 3.6.1. Grid Design
- 3.6.2. Forms
- 3.6.3. Components

3.7. Model View Controller
- 3.7.1. Web Development Methods
- 3.7.2. Design Pattern: MVC

3.8. Information Grid Technologies
- 3.8.1. Increased Computing Resources
- 3.8.2. Concept of Grid Technology

3.9. Service-Oriented Architecture
- 3.9.1. SOA and Web Services
- 3.9.2. Topology of a Web Service
- 3.9.3. Platforms for Web Services

3.10. HTTP Protocol
- 3.10.1. Messages
- 3.10.2. Persistent Sessions
- 3.10.3. Cryptographic System
- 3.10.4. HTTP Protocol Operation



A unique, key, and decisive educational experience to boost your professional development"

04

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

> *Our program prepares you to face new challenges in uncertain environments and achieve success in your career"*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

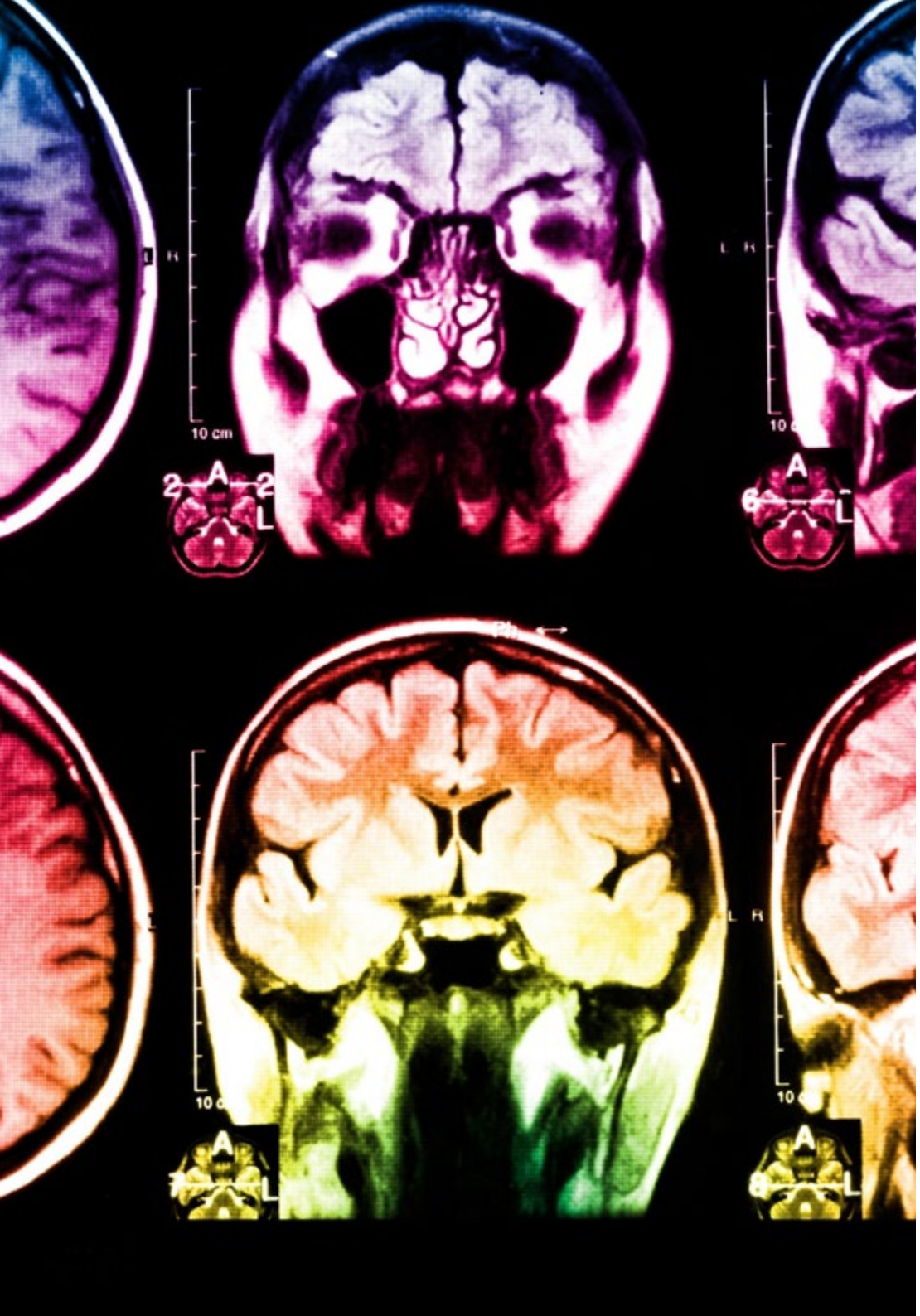
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

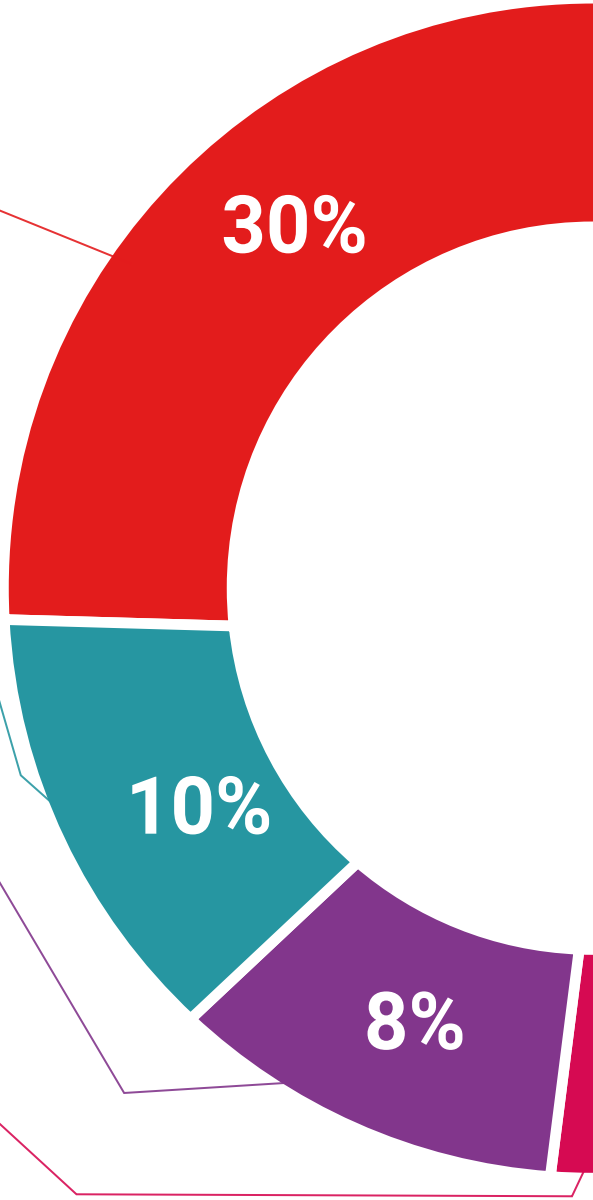
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

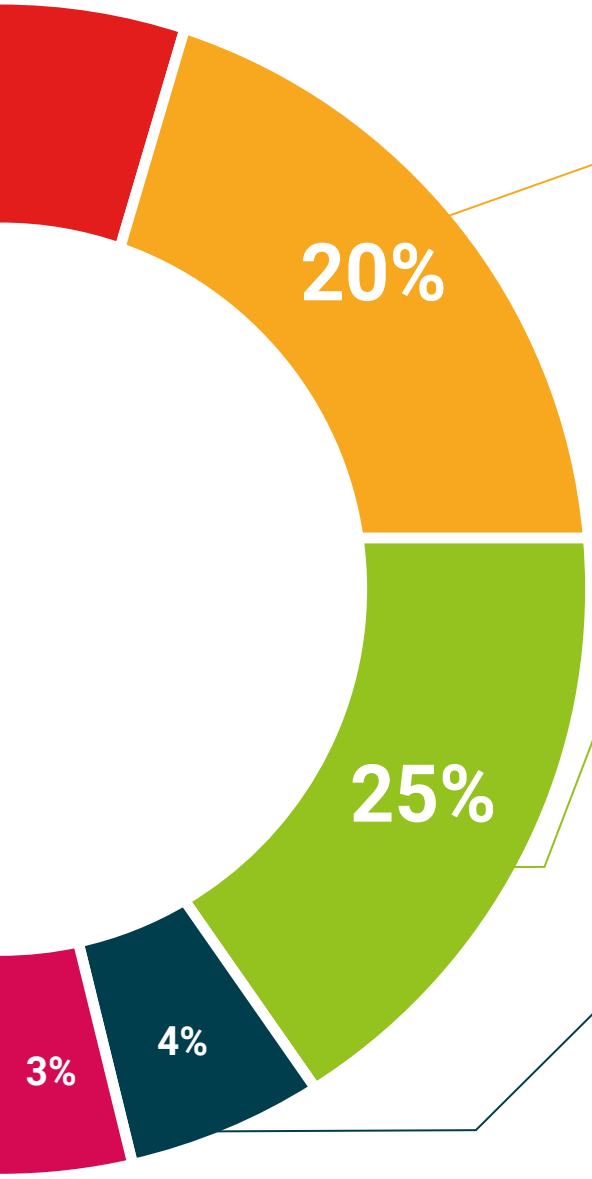
Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

05

Certificate

The Postgraduate Diploma in Free Software and Software Reuse guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This program will allow you to obtain your **Postgraduate Diploma in Free Software and Software Reuse** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (***official bulletin***). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

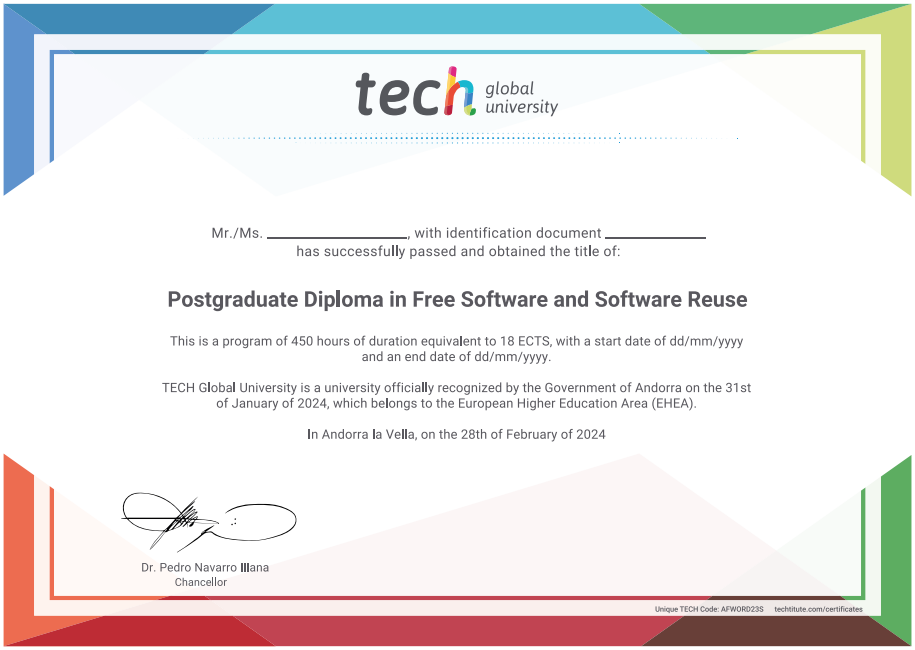
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Free Software and Software Reuse**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Diploma in Free Software and Software Reuse

This is a program of 450 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Chancellor

Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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