Postgraduate Certificate
Methodologies, Development and Quality in Software Engineering

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Postgraduate Certificate
Methodologies, Development and Quality in Software Engineering

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/information-technology/postgraduate-certificate/methodologies-develpment-quality-software-engineering**
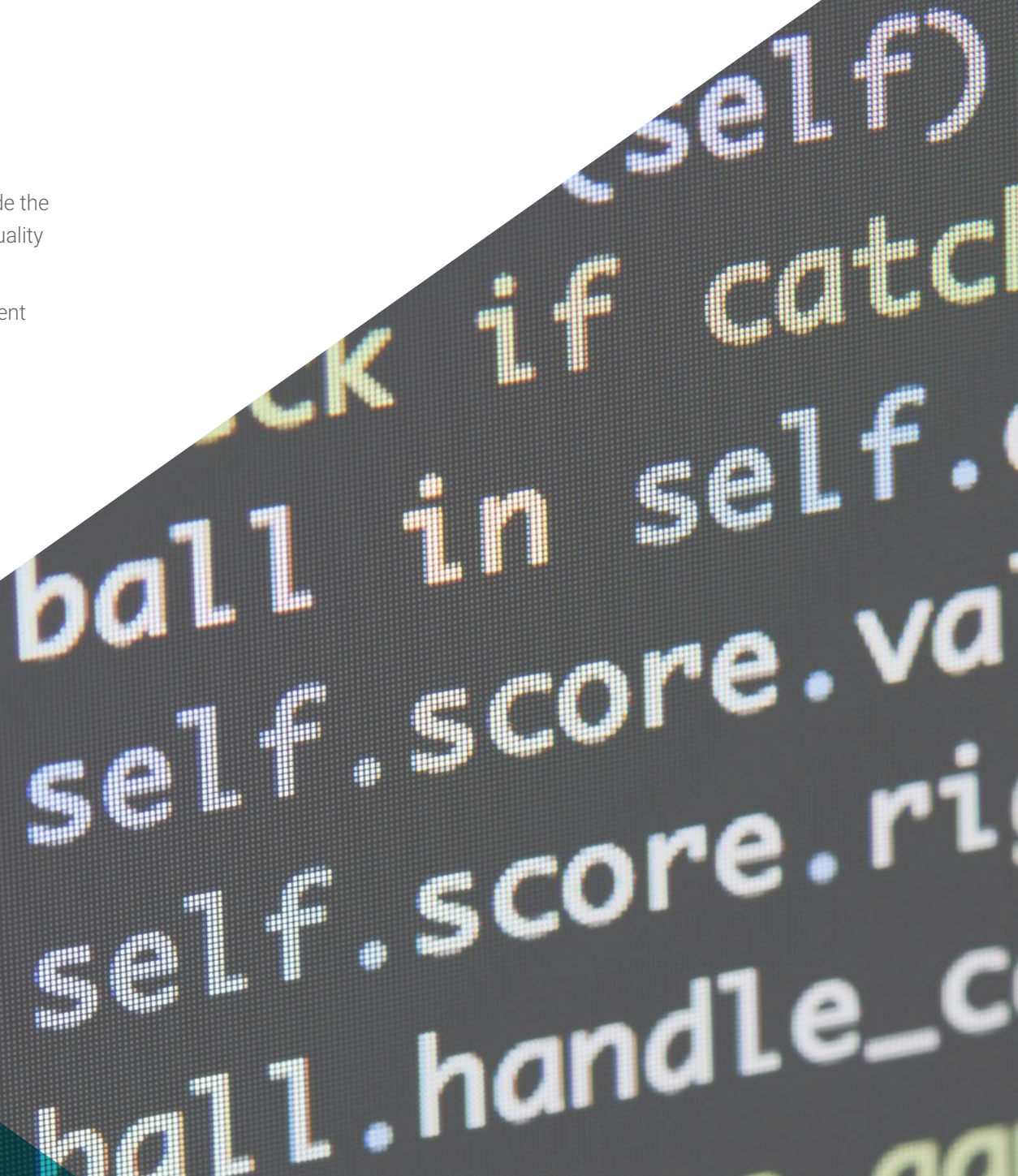
Index

01
Introduction

This program specializes the student in software engineering in order to provide the knowledge and tools necessary for the design and development of complex quality systems that respond to the problems posed.

With this intensive training the student will understand the software development process, under the different programming models and the object-oriented programming paradigm, among other issues of interest that will be addressed throughout this training.

> " The completion of this program will place Software Engineering and Computer Systems professionals at the forefront of the latest developments in the industry"

Throughout these months of training the student will learn the basics of software engineering, as well as the set of rules or ethical principles and professional responsibility during and after development.

The main objective of this training is that the student achieves the ability to incorporate substantial qualitative improvements, providing new solutions to specific problems that arise, either software or computer systems.

You will have the most advanced teaching resources and will have the opportunity to study a teaching program that brings together the most in-depth knowledge in the field, where a group of professors of high scientific rigor and extensive international experience provides you with the most complete and updated information on the latest advances and techniques in Software Engineering and Information Systems.

The syllabus covers the main current topics in Software Engineering and Computer Systems in such a way that whoever masters them will be prepared to work in this field. Therefore, it is not just another title in the backpack, but a real learning tool to approach the topics of the specialty in a modern, objective way and with the capacity of criteria based on the latest information available today.

It should be noted that since this is a 100% online program, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This **Postgraduate Certificate in Methodologies, Development and Quality in Software Engineering** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts in Methodologies, Development and Quality of Software Engineering
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies in Methodologies, Development and Quality of Software Engineering
- 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

This program is the best investment you can make in selecting a refresher program in the field of Methodologies, Development and Quality in Software Engineering. We offer you quality and free access to content"

" *Learn to design, evaluate and manage software engineering projects thanks to this high-quality program"*

Specialize in computer systems from professionals with extensive experience in the sector.

This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.

It includes in its teaching staff professionals belonging to the field of Methodologies, Development and Quality in Software Engineering, who pour into this training the experience of their work, in addition to recognized specialists from reference societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide professionals with situated and contextual learning, i.e., a simulated environment that will provide immersive training, designed for training oneself in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this, the professional will be assisted by an innovative interactive video system created by recognized and experienced experts in Methodologies, Development and Quality of Software Engineering.

02
Objectives

The Postgraduate Certificate in Methodologies, Development and Quality in Software Engineering is oriented to facilitate the performance of the professional to acquire and know the main novelties in this field, which will allow him to practice his profession with the highest quality and professionalism.

Our goal is for you to become the best professional in your sector. And for this we have the best methodology and content"

General Objectives

- Acquire new knowledge in Software and Computer Systems Engineering
- Acquire new skills in terms of new technologies and the latest software developments
- Process the data generated in Software Engineering and Computer Systems activities

Join us and we will help you achieve professional excellence"

Specific objectives

- Know the basics of software engineering, as well as the set of rules or ethical principles and professional responsibility during and after development
- Understand the software development process, under the different programming models and the object oriented programming paradigm
- Understand the different types of application modeling and design patterns in the Unified Modeling Language (UML)
- Acquire the knowledge required for the correct application of agile methodologies in software development such as Scrum, among others
- Knowing the Lean development methodology to discriminate the activities that do not add value in the process, in order to obtain a higher quality software

03
Structure and Content

The structure of the contents has been designed by the best professionals in the sector, with extensive experience and recognized prestige in the profession, and aware of the benefits that the latest educational technology can bring to higher education.

We have the most complete and up-to-date academic program in the market. We strive for excellence and for you to achieve it too"

Module 1. Methodologies, Development and Quality in Software Engineering

1.1.   Introduction to Software Engineering
    1.1.1.   Introduction
    1.1.2.   The Software Crisis
    1.1.3.   Differences between Software Engineering and Computer Science
    1.1.4.   Ethics and Professional Responsibility in Software Engineering
    1.1.5.   Software Factories
1.2.   The Software Development Process
    1.2.1.   Definition
    1.2.2.   Software Process Model
    1.2.3.   The Unified Software Development Process
1.3.   Object-Oriented Software Development
    1.3.1.   Introduction
    1.3.2.   Principles of Object Orientation
    1.3.3.   Objectives Definition
    1.3.4.   Class Definition
    1.3.5.   Object-Oriented Analysis vs. Object-Oriented Design
1.4.   Model-Based Software Development
    1.4.1.   The Need to Model
    1.4.2.   Software Systems Modeling
    1.4.3.   Object Modeling
    1.4.4.   UML
    1.4.5.   CASE Tools
1.5.   Application Modeling and Design Patterns with UML
    1.5.1.   Advanced Requirements Modeling
    1.5.2.   Advanced Static Modeling
    1.5.3.   Advanced Dynamic Modeling
    1.5.4.   Component Modeling
    1.5.5.   Introduction to Design Patterns with UML
    1.5.6.   Adapter
    1.5.7.   Factory
    1.5.8.   Singleton
    1.5.9.   Strategy
    1.5.10. Composite
    1.5.11. Facade
    1.5.12. Observer

1.6.   Model-Driven Engineering
    1.6.1.   Introduction
    1.6.2.   Metamodeling of Systems
    1.6.3.   MDA
    1.6.4.   DSL
    1.6.5.   Model Refinements with OCL
    1.6.6.   Model Transformations
1.7.   Ontologies in Software Engineering
    1.7.1.   Introduction
    1.7.2.   Ontology Engineering
    1.7.3.   Application of Ontologies in Software Engineering
1.8.   Agile Methodologies for Software Development, Scrum
    1.8.1.   What is Software Agility?
    1.8.2.   The Agile Manifesto
    1.8.3.   The Roadmap of an Agile Project
    1.8.4.   The Product Owner
    1.8.5.   User Stories
    1.8.6.   Agile Planning and Estimating
    1.8.7.   Measurements in Agile Development
    1.8.8.   Introduction to Scrum
    1.8.9.   The Roles
    1.8.10. The Product Backlog
    1.8.11. The Sprint
    1.8.12. Meetings
1.9.   Lean Software Development Methodology
    1.9.1.   Introduction
    1.9.2.   Kanban
1.10. Quality and Software Process Improvement
    1.10.1. Introduction
    1.10.2. Software Measurement
    1.10.3. Software Testing
    1.10.4. Software Process Quality Model: CMMI

"

A comprehensive and multidisciplinary training program that will allow you to excel in your career, following the latest advances in the field of Software Engineering Methodologies, Development and Quality"

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.

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.

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

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.

01
learning from evidence

02
relearning from evidence

03
testing

04
learning from an expert

05
neurocognitive context dependent learning

06
Von-Restorff effect

07
case based learning through storytelling

08
competencies testing (retesting)

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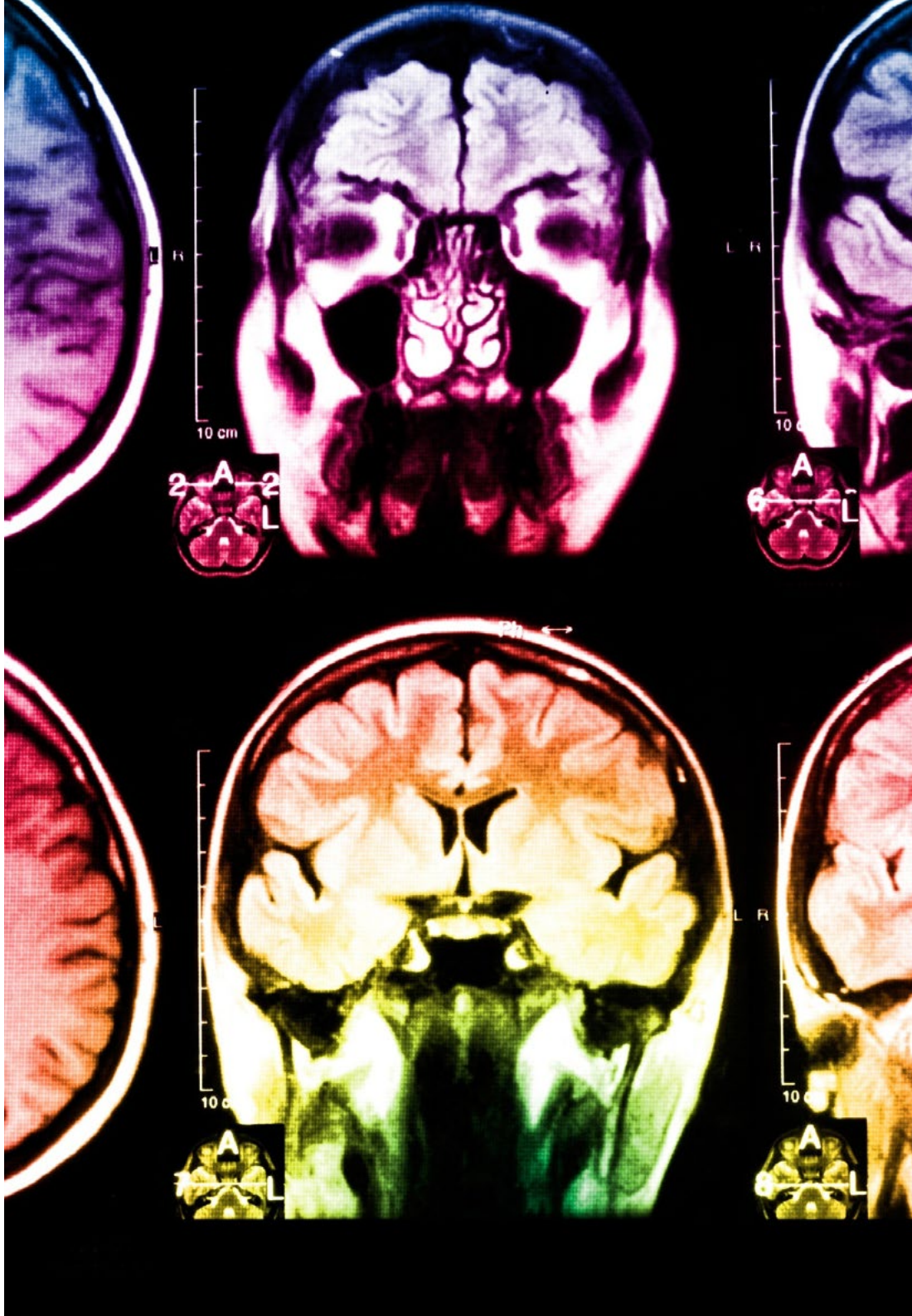
This program offers the best educational material, prepared with professionals in mind:

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.

30%

10%

8%

20%

25%

4%

3%
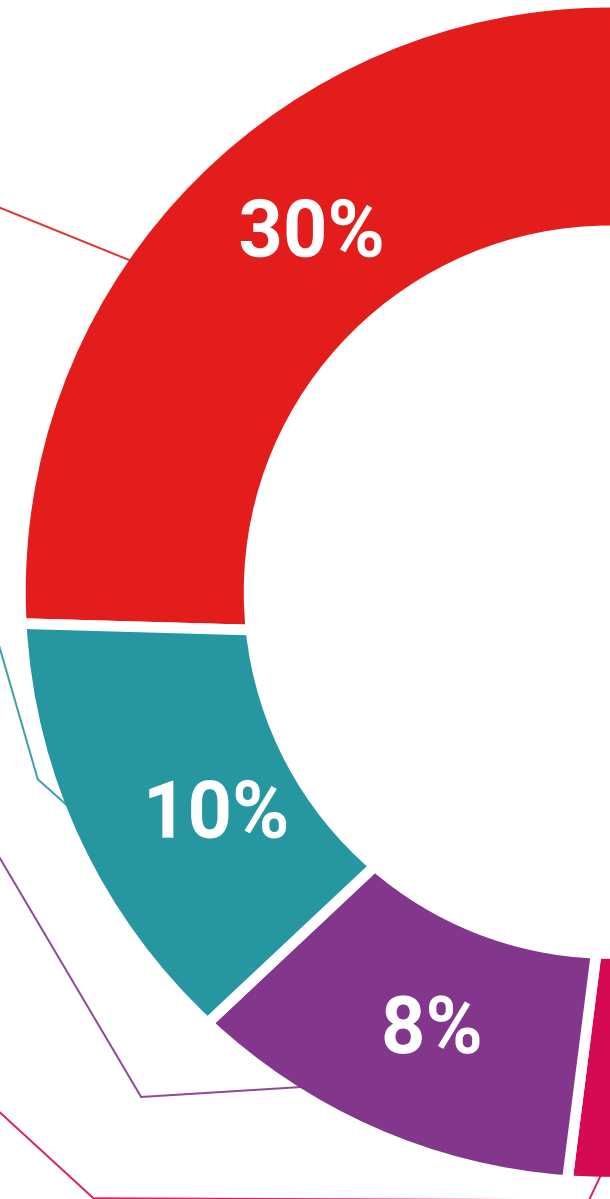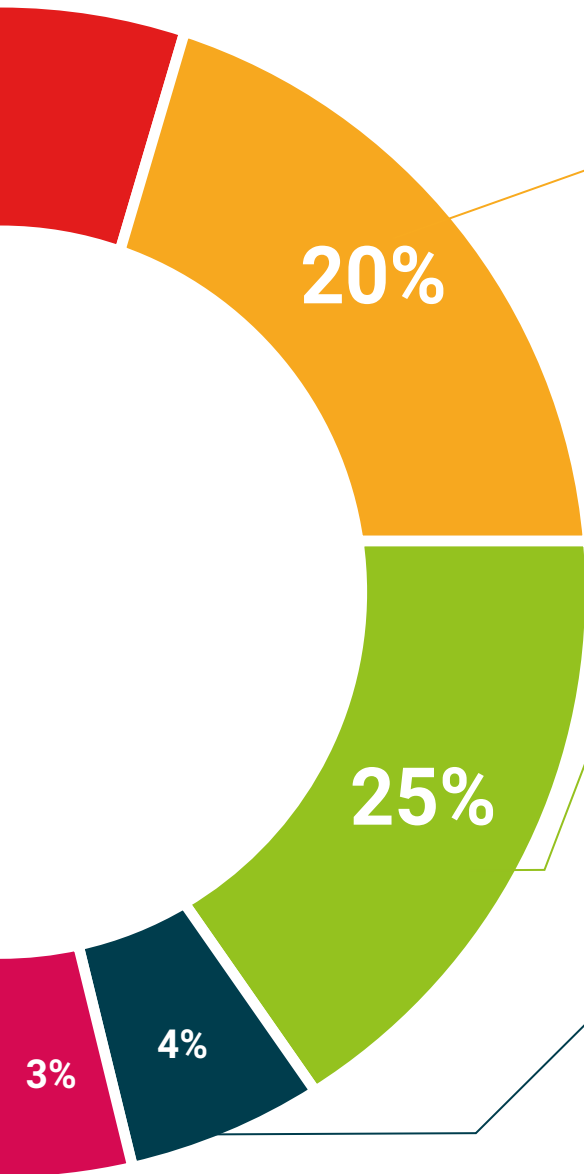
Case Studies

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 Certificate in Methodologies, Development and Quality in Software Engineering guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Methodologies, Development and Quality in Software Engineering** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Methodologies, Development and Quality in Software Engineering**

Official Nº of Hours: **150 h.**

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Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Methodologies, Development and Quality in Software Engineering

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

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 EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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