

Postgraduate Diploma Test-Driven Design



```
back the deselected mirror modifier object
```

```
cts.active = modifier_ob
```

```
str(modifier_ob)) # modifier ob is the active ob
```

```
lect = 0
```

```
list_selected_objects[0]
```



Postgraduate Diploma Test-Driven Design

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

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-test-driven-design

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 16

05

Methodology

p. 22

06

Certificate

p. 30

01

Introduction

In all project development, one final word stands out that involves the whole process, and that word is quality. In order to achieve optimal software that meets the requirements and is developed successfully, it is essential to follow a series of standards, methodologies and tests. Achieving more robust, more secure, faster and sustainable code development is only possible with Test-Driven Design. A practice that involves development as a whole, especially software design, and in this program the professional will be able to maximize their project management skills in an efficient and effective manner. A program that will provide students with knowledge of the most innovative methodologies and processes in just a few months, 100% online and guided by expert teachers.





“

This program covers the regulatory aspects essential for the creation of reliable software, theoretical concepts on testing based on the theory of software engineering and their practical application"

An IT professional must be focused on the quality of their projects. To achieve this optimally and in the required timeframe, they must be familiar with the necessary methodologies. Eliminating technical debt in present and future developments should be the goal, since for some years now projects have been developed very quickly, with the objective of closing them with the client under price and deadline criteria, instead of considering a quality approach. This has generated many problems, which, far from providing a quality approach, resulted in major losses.

This refresher program demonstrates the importance of Test-Driven Design to develop quality software, providing the professional with all the necessary tools. From knowing the phases in which a project is broken down and knowing the requirements to be met in order to decide which methodology to work with, generating an expert criterion.

This way, the different types of tests to which the software must be submitted, the tools available for it and the implications that these have in the software quality program are analyzed. Theoretical and practical approach, covering the essential regulatory aspects for the creation of reliable software, theoretical concepts on testing based on the theory of software engineering and the practical application of the same. Contents focused on quality aspects and complementing other standards, going deeper into the ISO 15504 standard, as well as ISO/IEC 15504.

It also delves into how the Scrum methodology works, its famous manifesto and how it was created as an alternative to the way of working in Waterfall. It discusses how a Kanban board works, what it consists of, how it is used and how it would be applied in a small test project. Taking into account the vision from the point of view of the client who has requested the project, studying, likewise, the communication between client-supplier.

To make this possible, TECH Technological University has assembled a group of experts in the area that will transmit the most up to date knowledge and experience. There will be 3 modules divided into different units and subunits, which will make it possible to learn in a maximum of 6 months. Through a modern virtual campus with theoretical and practical content, distributed in different formats. Implementing the Relearning methodology, which facilitates memorization and learning in an agile and efficient way.

The **Postgraduate Diploma in Test-Driven Design** contains the most complete and up-to-date educational program on the market. The most important features include:

- ◆ The development of case studies presented by experts in software development
- ◆ 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
- ◆ Theoretical lessons, questions for experts and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



The Postgraduate Diploma in Test-Driven Design analyzes the criteria underlying software quality. Broaden your expertise. Enroll now"

“

This program allows you to orient your professional profile towards that specialization that will make you unique in your environment. Standing out for the most innovative practices and know how”

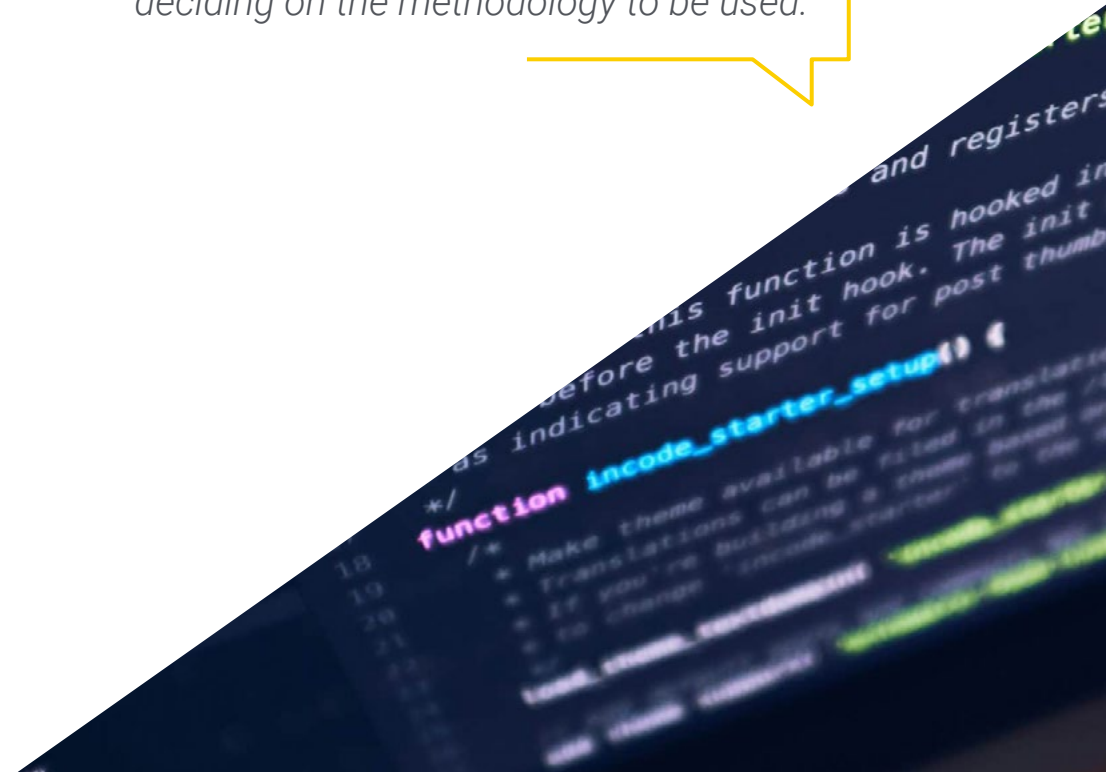
The program's teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

You will understand the importance of software testing and test automation within the development process of a project.

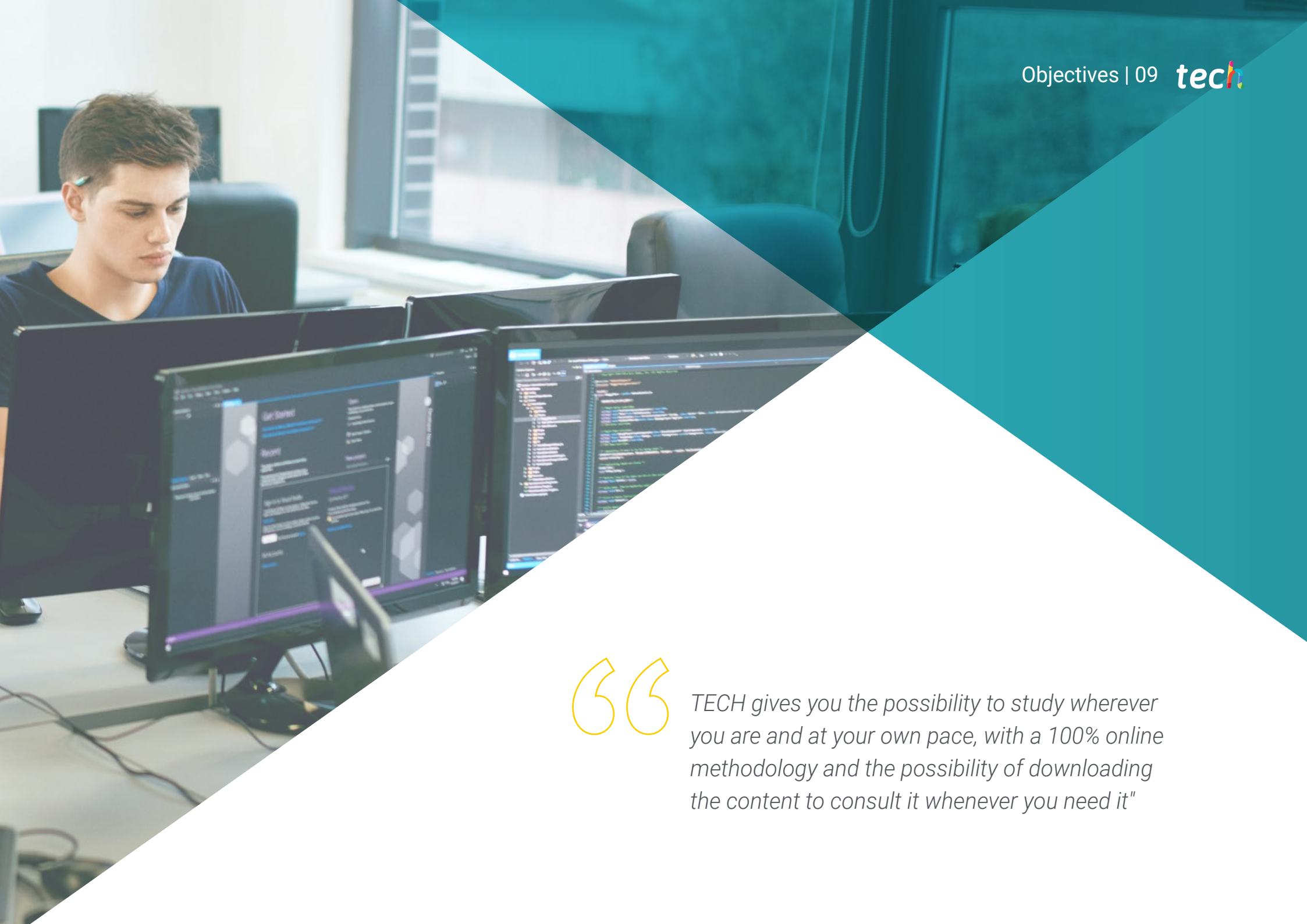
Learn all about project management, analyze the different phases into which it is broken down and discuss the process of deciding on the methodology to be used.



02 Objectives

This Postgraduate Diploma in Test-Driven Design, has a series of general and specific objectives that guide the achievement of the most important goal, which is that the student can obtain the knowledge required to master the techniques and tools in the process of software quality development guided by different tests and methodologies. Providing a broad and specialized theoretical and practical knowledge to understand the development of projects from a modern and efficient perspective.





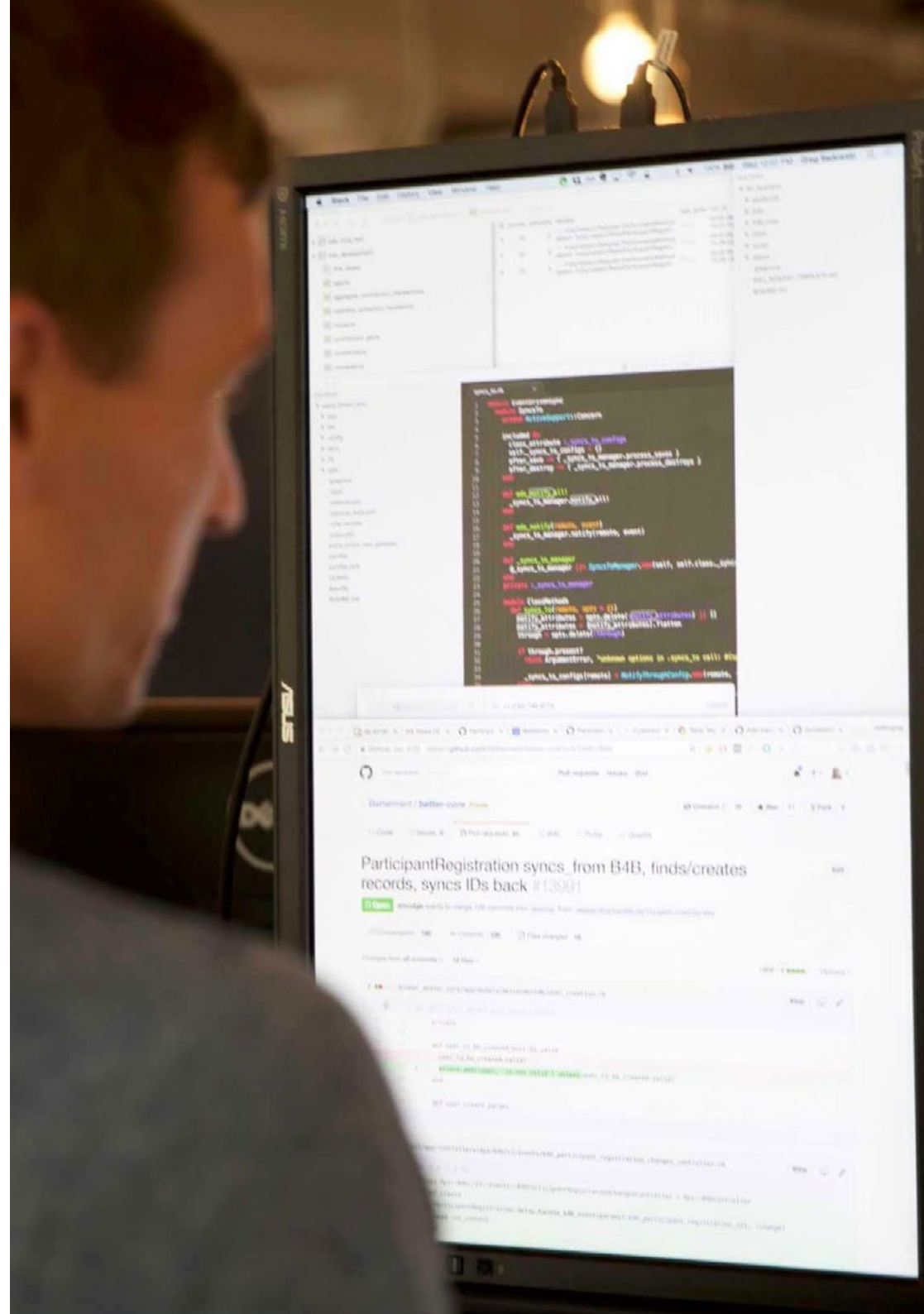
“

TECH gives you the possibility to study wherever you are and at your own pace, with a 100% online methodology and the possibility of downloading the content to consult it whenever you need it"



General Objectives

- ◆ Develop the criteria, tasks and advanced methodologies to understand the relevance of quality oriented work
- ◆ Develop specialized knowledge on Waterfall and Agile Methodology
- ◆ Analyze the key factors in the quality of a software project
- ◆ Develop the relevant regulatory aspects
- ◆ Determine how to automate tests
- ◆ Develop specialized project management expertise





Specific Objectives

Module 1. Software Project Development. Functional and technical documentation

- ◆ Determine the influence of project management on quality
- ◆ Develop the different phases of a project
- ◆ Differentiate the quality concepts inherent to functional and technical documentation
- ◆ Analyze the requirements gathering phase, the analysis phase, team management and the construction phase
- ◆ Establish the different software project management methodologies
- ◆ Generate criteria to decide which is the most appropriate methodology according to the type of project

Module 2. Software Testing. Test automation

- ◆ Establish the differences between product quality, process quality and quality of use
- ◆ Know the ISO/IEC 15504 standard
- ◆ Determine the details of CMMI
- ◆ Learn the keys to continuous integration, repositories and the repercussions they have on a software development team
- ◆ Establish the relevance of incorporating repositories for software projects. Learn how to create them with TFS
- ◆ Analyze the different types of fundamental tests, such as load, unit, stress and endurance tests
- ◆ Assimilate the importance of software scalability in information systems design and development

Module 3. Software Project Management Methodologies Waterfall Methodology vs Agile Methodology

- ◆ Determine what the Waterfall Methodology consists of
- ◆ Delve into the Scrum methodology
- ◆ Establish the differences between Waterfall and Scrum
- ◆ Clarify the differences between Waterfall and Scrum methodologies and how the customer sees it
- ◆ Explore the Kanban Board
- ◆ Approach a same project with Waterfall and Scrum
- ◆ Setting up a hybrid project



Learn about TECH's unique state-of-the-art methodology, which allows you to learn quickly and efficiently. Get your qualification in 6 months with this Postgraduate Diploma in Test-Driven Design"

03

Course Management

Expert teachers with extensive experience in the area of IT solutions, software development and research are in charge of this Postgraduate Diploma, offering the necessary tools and knowledge to the future graduate. Focused on Test-Driven Design contemplated in software development and quality processes. This team of professionals will guide students at all times, in order to achieve the objectives remotely as it is a purely online program and following the relearning methodology implemented by TECH.





“

Specialized teachers are committed to providing you with the best content and making your learning process an agile and dynamic experience. Clarifying your doubts and accompanying you all along the way”

Management



Mr. Molina Molina, Jerónimo

- AI Engineer & Software Architect. NASSAT - Internet Satellite in Motion
- Senior Consultant at Hexa Ingenieros. Introducer of Artificial Intelligence (ML and CV)
- Expert in artificial intelligence based solutions in the fields of Computer Vision, ML/DL and NLP. Currently investigating application possibilities of Transformers and Reinforcement Learning in a personal research project
- University Expert in Business Creation and Development. Bancaixa – FUNDEUN Alicante
- Computer Engineer. University of Alicante
- Master in Artificial Intelligence. Catholic University of Avila
- Executive MBA. European Business Campus Forum

Professors

Mr. Pi Morell, Oriol

- ♦ Hosting and Mail Product Owner. CDMON
- ♦ Functional Analyst and Software Engineer in different organizations such as Fihoca, Atmira, CapGemini
- ♦ Teacher of different courses such as BPM in CapGemini, ORACLE Forms CapGemini, Business Processes Atmira
- ♦ Degree in Technical Engineering in Computer Management from the Autonomous University of Madrid
- ♦ Master's Degree in Artificial Intelligence
- ♦ Master's Degree in Business Administration MBA
- ♦ Master's Degree in Information Systems Management Teaching Experience
- ♦ Postgraduate, Postgraduate Design Patterns. Open University of Catalonia

Professors

Ms. Martínez Cerrato, Yésica

- ◆ Electronic Security Product Technician at Securitas Security Spain
- ◆ Business Intelligence Analyst at Ricopia Technologies (Alcalá de Henares) Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá
- ◆ Responsible for training new recruits on commercial management software (CRM, ERP, INTRANET), product and procedures in Ricopia Technologies (Alcalá de Henares)
- ◆ Responsible for training new scholarship holders incorporated to the Computer Classrooms at the University of Alcalá
- ◆ Project Manager in the area of Key Accounts Integration at Correos and Telégrafos (Madrid)
- ◆ Computer Technician-Responsible for computer classrooms OTEC, University of Alcalá (Alcalá de Henares)
- ◆ Computer classes teacher at ASALUMA Association (Alcalá de Henares)
- ◆ Scholarship for Training as a Computer Technician in OTEC, University of Alcalá (Alcalá de Henares)

Dr. Peralta Martín-Palomino, Arturo

- ◆ CEO and CTO at Prometheus Global Solutions
- ◆ CTO at Korporate Technologies
- ◆ CTO in AI Shephers GmbH
- ◆ Doctorate in Psychology from the University of La Castilla
- ◆ PhD in Economics, Business and Finance from the Camilo José Cela University Outstanding Award in her PhD
- ◆ PhD in Psychology, University of Castilla La Mancha
- ◆ Master's Degree in Advanced Information Technologies from the University of Castilla la Mancha
- ◆ Master MBA+E (Master's Degree in Business Administration and Organisational Engineering) from the University of Castilla la Mancha
- ◆ Associate lecturer, teaching undergraduate and master's degrees in Computer Engineering at the University of Castilla la Mancha
- ◆ Professor of the Master in Big Data and Data Science at the International University of Valencia
- ◆ Lecturer of the Master's Degree in Industry 4.0 and the Master's Degree in Industrial Design and Product Development
- ◆ Member of the SMILe Research Group of the University of Castilla la Mancha

04

Structure and Content

The design of this Postgraduate Diploma has been developed by specialized teachers, selecting the most important topics for the development of quality software. Composed of 3 teaching modules, covering software project development, functional and technical documentation, software testing and test automation, as well as the different software project management methodologies. All with the purpose of achieving quality, developing the necessary tests to achieve a clean code that works. The variety of multimedia content available to students from the TECH Technological University platform will allow them to consult and learn in a comfortable and agile way.



“

You will learn the methodologies that are being used in management: Waterfall and Agile"

Module 1. Software Project Development. Functional and Technical Documentation

- 1.1. Project Management
 - 1.1.1. Project Management in Software Quality
 - 1.1.2. Project Management Advantages
 - 1.1.3. Project Management Typology
- 1.2. Methodology in Project Management
 - 1.2.1. Methodology in Project Management
 - 1.2.2. Project Methodologies. Typology
 - 1.2.3. Methodologies in Project Management. Application
- 1.3. Requirements Identification Phase
 - 1.3.1. Identification of Project Requirements
 - 1.3.2. Management of Project Meetings
 - 1.3.3. Documentation to Be Provided
- 1.4. Models
 - 1.4.1. Initial Phase
 - 1.4.2. Analysis Phase
 - 1.4.3. Construction Phase
 - 1.4.4. Testing Phase
 - 1.4.5. Delivery
- 1.5. Data Model to Be Used
 - 1.5.1. Determination of the New Data Model
 - 1.5.2. Identification of the Data Migration Plan
 - 1.5.3. Data Set
- 1.6. Impact on Other Projects
 - 1.6.1. Impact of a Project. Examples:
 - 1.6.2. Risk in the Project
 - 1.6.3. Risk Management
- 1.7. MUST of the Project
 - 1.7.1. MUST of the Project
 - 1.7.2. Identification of Project MUST
 - 1.7.3. Identification of the Execution Points for Project Delivery
- 1.8. The Project Construction Team
 - 1.8.1. Roles to be Involved According to the Project
 - 1.8.2. Contact with HR for Recruitment
 - 1.8.3. Project Deliverables and Schedule
- 1.9. Technical Aspects of a Software Project
 - 1.9.1. Project Architect. Technical Aspects
 - 1.9.2. Technical Leaders
 - 1.9.3. Construction of the Project Software
 - 1.9.4. Code Quality Assessment, Sonar
- 1.10. Project Deliverables
 - 1.10.1. Functional Analysis
 - 1.10.2. Data Model
 - 1.10.3. State Diagram
 - 1.10.4. Technical Documentation

Module 2. Software Testing. Test Automation

- 2.1. Software Quality Models
 - 2.1.1. Product Quality
 - 2.1.2. Process Quality
 - 2.1.3. Quality of Use
- 2.2. Process Quality
 - 2.2.1. Process Quality
 - 2.2.2. Maturity Models
 - 2.2.3. ISO 15504 Standards
 - 2.2.3.1. Purposes
 - 2.2.3.2. Context
 - 2.2.3.3. Stages
- 2.3. ISO/IEC 15504 Standard
 - 2.3.1. Process Categories
 - 2.3.2. Development Process Example
 - 2.3.3. Profile Fragment
 - 2.3.4. Stages
- 2.4. CMMI (Capability Maturity Model Integration)
 - 2.4.1. CMMI Capability Maturity Model Integration
 - 2.4.2. Models and Areas. Typology
 - 2.4.3. Process Areas
 - 2.4.4. Capacity Levels
 - 2.4.5. Process Management
 - 2.4.6. Project Management
- 2.5. Change and Repository Management
 - 2.5.1. Software Change Management
 - 2.5.1.1. Configuration Item. Continuous Integration
 - 2.5.1.2. Lines
 - 2.5.1.3. Flowcharts
 - 2.5.1.4. Branches
 - 2.5.2. Repository
 - 2.5.2.1. Version Control
 - 2.5.2.2. Work Team and Use of the Repository
 - 2.5.2.3. Continuous Integration in the Repository
- 2.6. Team Foundation Server (TFS)
 - 2.6.1. Installation and Configuration
 - 2.6.2. Creation of a Team Project.
 - 2.6.3. Adding Content to Source Code Control
 - 2.6.4. TFS on Cloud
- 2.7. Testing
 - 2.7.1. Motivation for Testing
 - 2.7.2. Verification Testing
 - 2.7.3. Beta Testing
 - 2.7.4. Implementation and Maintenance
- 2.8. Load Testing
 - 2.8.1. Load Testing
 - 2.8.2. LoadView Testing
 - 2.8.3. K6 Cloud Testing
 - 2.8.4. Loader Testing
- 2.9. Unit, Stress and Endurance Tests
 - 2.9.1. Reason for Unit Tests
 - 2.9.2. Unit Testing Tools
 - 2.9.3. Reason for Stress Tests
 - 2.9.4. Testing Using Stress Testing
 - 2.9.5. Reason for Endurance Tests
 - 2.9.6. Tests Using LoadRunner
- 2.10. Scalability. Scalable Software Design
 - 2.10.1. Scalability and Software Architecture
 - 2.10.2. Independence Between Layers
 - 2.10.3. Coupling Between Layers Architecture Patterns

Module 3. Software Project Management Methodologies Waterfall Methodology vs Agile Methodology

- 3.1. Waterfall Methodology
 - 3.1.1. Waterfall Methodology
 - 3.1.2. Waterfall Methodology Influence on Software Quality
 - 3.1.3. Waterfall Methodology Examples
- 3.2. Agile Methodology
 - 3.2.1. Agile Methodology
 - 3.2.2. Agile Methodology. Influence on Software Quality
 - 3.2.3. Agile Methodology. Examples
- 3.3. Scrum Methodology
 - 3.3.1. Scrum Methodology
 - 3.3.2. Scrum Manifesto
 - 3.3.3. Scrum Application
- 3.4. Kanban Board
 - 3.4.1. Kanban Method
 - 3.4.2. Kanban Board
 - 3.4.3. Kanban Board Application Examples
- 3.5. Waterfall Project Management
 - 3.5.1. Project Phases
 - 3.5.2. Vision in a Waterfall Project
 - 3.5.3. Deliverables to Consider
- 3.6. Project Management in Scrum
 - 3.6.1. Phases in a Scrum Project
 - 3.6.2. Vision in a Scrum Project
 - 3.6.3. Deliverables to Consider
- 3.7. Waterfall vs. Scrum Comparison
 - 3.7.1. Pilot Project Approach
 - 3.7.2. Project Applying Waterfall. Example
 - 3.7.3. Project Applying Scrum. Example



- 3.8. Customer Vision
 - 3.8.1. Documents in a Waterfall
 - 3.8.2. Documents in a Scrum
 - 3.8.3. Comparison
- 3.9. Kanban Structure
 - 3.9.1. User Stories
 - 3.9.2. Backlog
 - 3.9.3. Kanban Analysis
- 3.10. Hybrid Projects
 - 3.10.1. Project Construction
 - 3.10.2. Project Management
 - 3.10.3. Deliverables to Consider

“

With the most exclusive content, become an expert in just a few months and give a plus to your professional profile”



05 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.



A close-up photograph of a person's hands typing on a laptop keyboard. The image is partially obscured by a teal diagonal graphic element that covers the top right and bottom right portions of the page.

“

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

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.



06 Certificate

The Postgraduate Diploma in Test-Driven Design guarantees students, in addition to the most rigorous and up to date education, access to a Postgraduate Diploma 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 Diploma in Test-Driven Design** 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 Diploma** issued by **TECH Technological University** via tracked delivery*.

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

Title: **Postgraduate Diploma in Test-Driven Design**

Official N° of hours: **450 h.**



*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.



Postgraduate Diploma Test-Driven Design

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

Postgraduate Diploma Test-Driven Design

