

# Postgraduate Certificate Advanced Software Engineering



## Postgraduate Certificate Advanced Software Engineering

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

Website: [www.techtute.com/pk/information-technology/postgraduate-certificate/advanced-software-engineering](http://www.techtute.com/pk/information-technology/postgraduate-certificate/advanced-software-engineering)

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# 01

# Introduction

The student will develop their knowledge and skills in Advanced Software Engineering, in a practical and rigorous way, with this online training. You will learn in depth the different agile methodologies used in software engineering from experts.





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*This Postgraduate Certificate will allow you to update your knowledge in Advanced Software Engineering in a practical way, 100% online, without renouncing to the maximum academic rigor"*

This program is aimed at those interested in achieving a higher level of knowledge in Advanced Software Engineering. The main objective is to enable the student to apply the knowledge acquired in this Postgraduate Certificate in the real world, in a work environment that reproduces the conditions that may be encountered in the future, in a rigorous and realistic manner.

The Postgraduate Certificate will prepare the student for the professional practice of computer engineering, thanks to a transversal and versatile training adapted to new technologies and innovations in this field. You will obtain extensive knowledge in Advanced Software Engineering from professionals in the sector.

The students will be able to take the opportunity and study this program in a 100% online format, without neglecting their obligations.

This **Postgraduate Certificate in Advanced Software Engineering** 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 Advanced Software Engineering
- ♦ Its graphic, schematic and eminently practical contents provide scientific and practical information on Advanced Software Engineering
- ♦ News on the latest advances in Advanced Software Engineering
- ♦ 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 latest techniques and strategies with this program and achieve success as a computer engineer"*



*Get trained in Advanced Software Engineering with this intensive program, from the comfort of your home"*

*Take advantage of the latest educational technology to get up to date in Advanced Software Engineering without leaving home.*

*Learn the latest techniques in Advanced 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.

This program is designed around Problem-Based Learning, whereby the students must try to solve the different professional practice situations that arise throughout the program. For this, the professional will be assisted by an innovative interactive video system created by recognized experts in Advanced Software Engineering 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 student, this Postgraduate Certificate will progressively lead you to acquire the competencies that will propel you to a higher professional level.







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*Achieve the level of knowledge you desire  
and master the fundamental concepts in  
Advanced Software Engineering with this  
high-level training"*



## General Objectives

- ♦ Train scientifically and technologically, as well as prepare for the professional practice of computer engineering, all with a transversal and versatile training adapted to new technologies and innovations in this field
- ♦ Obtain extensive knowledge in the field of computation, computer structure and in Advanced Software Engineering, including the mathematical, statistical and physical basis essential in engineering

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*Enroll in the best Advanced Software Engineering program on the university scene today”*







## Specific objectives

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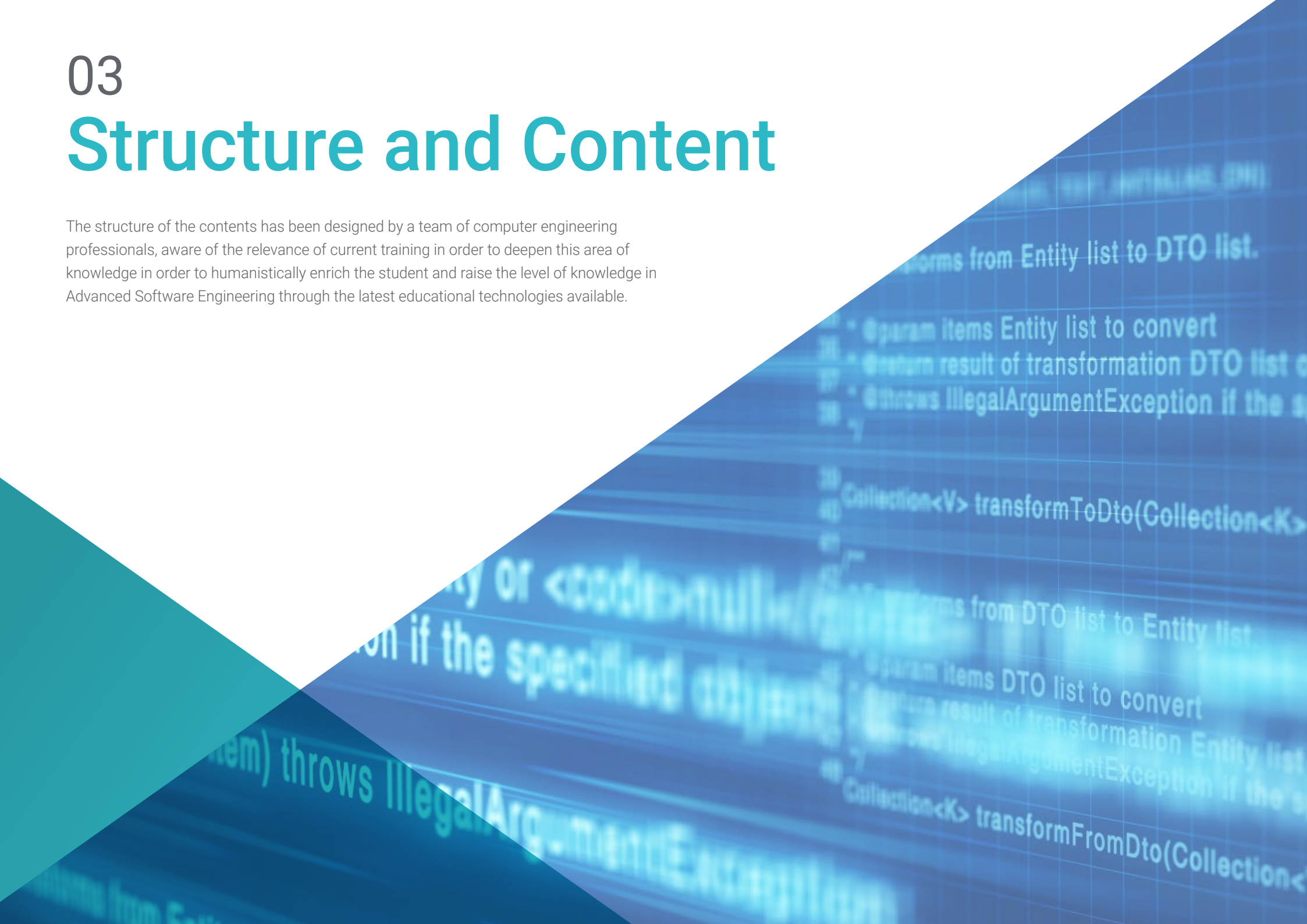
- ◆ Know in depth the different agile methodologies used in software engineering
- ◆ Learn to develop using Scrum, extreme programming and reuse-based software development techniques
- ◆ Understand the concepts and processes of software design, learning also about architecture design and about component-level and pattern-based design
- ◆ Introduce the DevOps concept and its main practices
- ◆ Learn how to test software, with methodologies such as Test Driven Development, Acceptance Test Driven Development, Behavior Driven Development, BDD y Cucumber
- ◆ Understand the different patterns of system architectures and software design, as well as the architecture of cloud applications



# 03

## Structure and Content

The structure of the contents has been designed by a team of computer engineering professionals, aware of the relevance of current training in order to deepen this area of knowledge in order to humanistically enrich the student and raise the level of knowledge in Advanced Software Engineering through the latest educational technologies available.



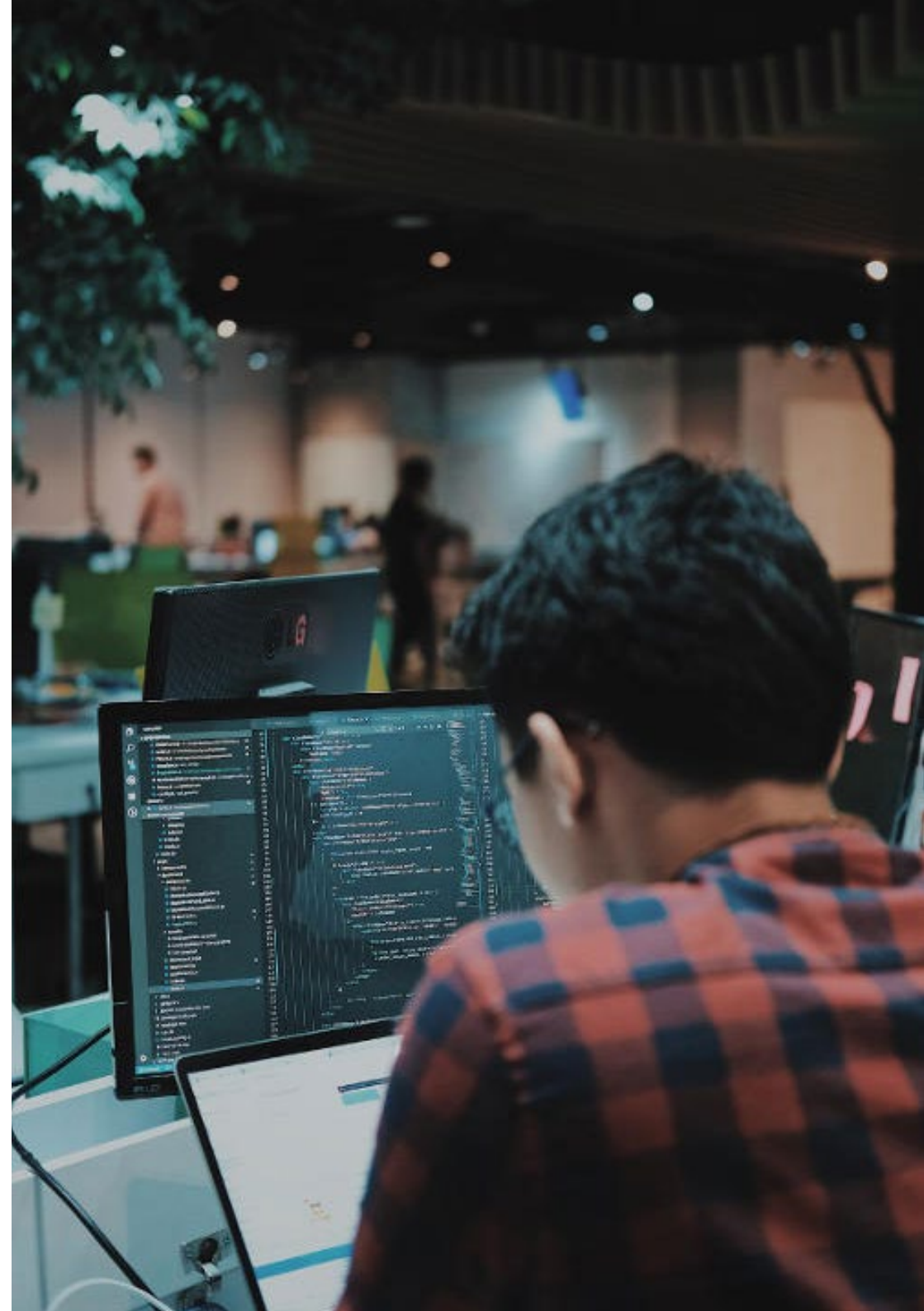
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*This Postgraduate Certificate from Advanced Software Engineering contains the most complete and up-to-date of learning program on the market”*



## Module 1. Advanced Software Engineering

- 1.1. Introduction to Agile Methodologies
  - 1.1.1. Process Models and Methodologies
  - 1.1.2. Agility and Agile Processes
  - 1.1.3. Agile Manifesto
  - 1.1.4. Some Agile Methodologies
  - 1.1.5. Agile vs. Traditional
- 1.2. Scrum
  - 1.2.1. Origins and Philosophy of Scrum
  - 1.2.2. Scrum Values
  - 1.2.3. Scrum Process Flow
  - 1.2.4. Scrum Roles
  - 1.2.5. Scrum Artifacts
  - 1.2.6. Scrum Events
  - 1.2.7. User Stories
  - 1.2.8. Scrum Extensions
  - 1.2.9. Agile Estimates
  - 1.2.10. Scrum Scaling
- 1.3. Extreme Programming
  - 1.3.1. Justification and Overview of XP
  - 1.3.2. The XP Life Cycle
  - 1.3.3. The Five Core Values
  - 1.3.4. The Twelve Basic Practices in XP
  - 1.3.5. Roles of Participants
  - 1.3.6. XP Industrial
  - 1.3.7. Critical Assessment of XP



- 1.4. Software Development Based on Reusability
  - 1.4.1. Software Reuse
  - 1.4.2. Code Reuse Levels
  - 1.4.3. Specific Reuse Techniques
  - 1.4.4. Component-Based Development
  - 1.4.5. Benefits and Problems of Reuse
  - 1.4.6. Reuse Planning
- 1.5. System Architecture and Software Design Patterns
  - 1.5.1. Architectural Design
  - 1.5.2. General Architectural Patterns
  - 1.5.3. Fault Tolerant Architectures
  - 1.5.4. Distributed Systems Architectures
  - 1.5.5. Design Patterns
  - 1.5.6. Gamma Patterns
  - 1.5.7. Interaction Design Patterns
- 1.6. Cloud Application Architecture
  - 1.6.1. Cloud Computing Fundamentals
  - 1.6.2. Cloud Application Quality
  - 1.6.3. Architectural Styles
  - 1.6.4. Design Patterns
- 1.7. Software Testing: TDD, ATDD and BDD
  - 1.7.1. Software Verification and Validation
  - 1.7.2. Software Testing
  - 1.7.3. Test Driven Development (TDD)
  - 1.7.4. Acceptance Test Driven Development (ATDD)
  - 1.7.5. Behavior Driven Development (BDD)
  - 1.7.6. BDD and Cucumber
- 1.8. Software Process Improvement
  - 1.8.1. Software Process Improvement
  - 1.8.2. The Process Improvement Approach
  - 1.8.3. Maturity Models
  - 1.8.4. The CMMI Model
  - 1.8.5. CMMI V2.0
  - 1.8.6. CMMI and Agile
- 1.9. The Quality of the Software Product: Square
  - 1.9.1. Software Quality
  - 1.9.2. Software Product Quality Models
  - 1.9.3. ISO/IEC 25000 Family
  - 1.9.4. ISO/IEC 25010: Quality Model and Quality Characteristics
  - 1.9.5. ISO/IEC 25012: the Quality of the Data
  - 1.9.6. ISO/IEC 25020 Software Quality Measurement
  - 1.9.7. ISO/IEC 25022, 25023 and 25024: Software and Data Quality Metrics
  - 1.9.8. ISO/IEC 25040 Software Assessment
  - 1.9.9. Accreditation Process
- 1.10. Introduction to DevOps
  - 1.10.1. DevOps Concept
  - 1.10.2. Core Practices



*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.





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*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.

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*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.



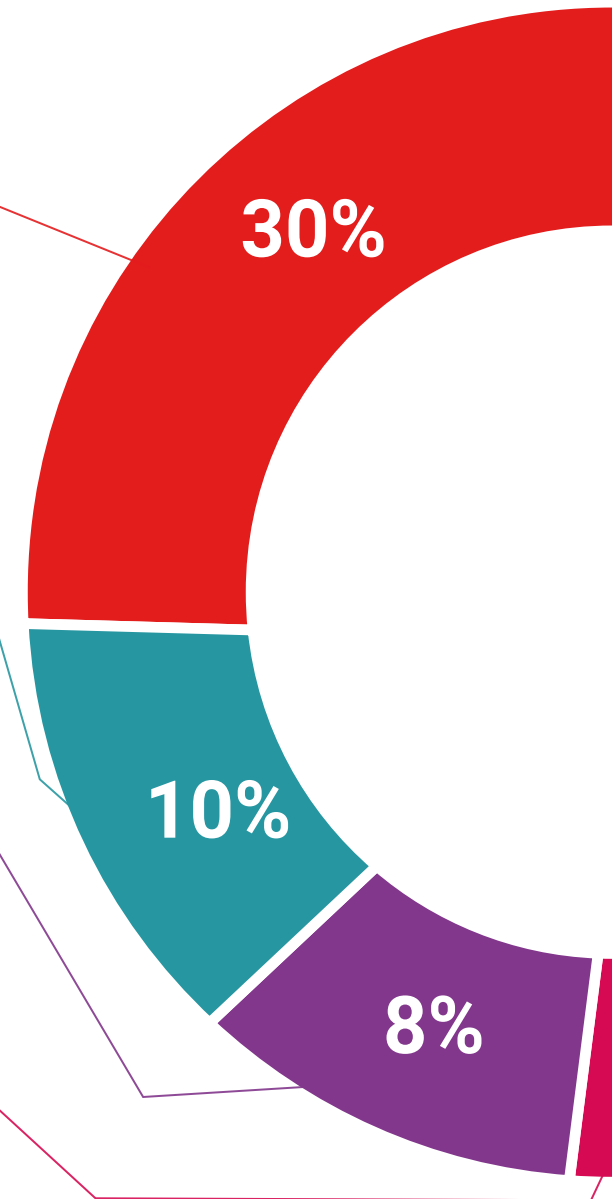
#### Practising Skills and Abilities

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.

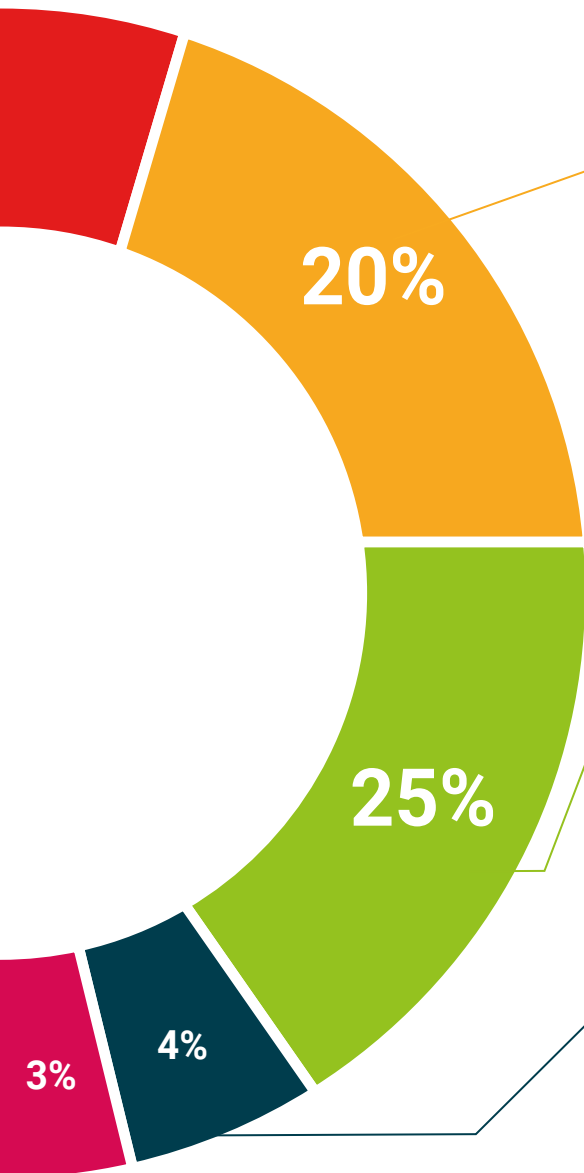


#### Additional Reading

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 Certificate in Advanced 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.



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

This **Postgraduate Certificate in Advanced 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 certificate 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 Advanced Software Engineering**

Official N° of Hours: **150 h.**







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- » Dedication: 16h/week
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