

Postgraduate Certificate

Fundamentals of Mobile and Cell Network Communications





Postgraduate Certificate Fundamentals of Mobile and Cell Network Communications

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

Website: www.techtute.com/in/information-technology/postgraduate-certificate/fundamentals-mobile-cell-network-communications

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01

Introduction

Mobile communications have undergone major advances in recent years. Therefore, signal propagation and reception in mobile communications is carried out through open space. This program brings students closer to this field, with an up-to-date and quality program. It is a comprehensive education that seeks to prepare students for success in their profession.



50%

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If you are looking for a quality program that will help you start working in one of the fields with the most professional prospects, this is your best option”

Advances in telecommunications are happening all the time, as this is one of the fastest evolving areas. It is therefore necessary to have IT experts who can adapt to these changes and have first-hand knowledge of the new tools and techniques that are emerging in this field.

This Postgraduate Certificate in Fundamentals of Mobile and Cell Network Communications addresses the complete range of topics involved in this field. Its study has a clear advantage over other programs that focus on specific blocks, which prevents students from becoming familiar with the interrelationship with other fields included in the multidisciplinary area of telecommunications. In addition, the teaching team of this educational program has made a careful selection of each of the topics of this program in order to offer students the most complete study opportunity possible and always linked to current events.

This educational program covers the fundamentals of the radio interface, radiating elements and basic parameters, wave propagation through mobile channels, and the different cellular systems, among other aspects.

This Postgraduate Certificate is aimed at those interested in achieving a higher level of knowledge in Fundamentals of Mobile and Cell Network Communications. The main objective is for students to specialize their knowledge in simulated work environments and conditions in a rigorous and realistic manner so they can later apply it in the real world.

Additionally, as it is a 100% online program, the student is not constrained by fixed timetables or the need to move to another physical location, but can access the contents at any time of the day, balancing their professional or personal life with their academic life.

This **Postgraduate Certificate in Fundamentals of Mobile and Cell Network Communications** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Development of case studies presented by experts in Fundamentals of Mobile and Cell Network Communications
- ◆ 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 Fundamentals of Mobile and Cell Network Communications
- ◆ 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

“Do not miss the opportunity to take this Postgraduate Certificate in Fundamentals of Mobile and Cell Network Communications. It's the perfect opportunity to advance your career”

“ *This Postgraduate Certificate is the best investment you can make when selecting a refresher program to update your knowledge in Fundamentals of Mobile and Cell Network Communications*”

The teaching staff includes professionals from the field of information technology, who bring their experience to this specialization 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 education programmed to learn 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, professionals will be assisted by an innovative interactive video system developed by renowned and experienced experts in Fundamentals of Mobile and Cell Network Communications.

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

This 100% online Postgraduate Certificate will allow you to combine your studies with your professional work.



02 Objectives

The Postgraduate Certificate in Fundamentals of Mobile and Cell Network Communications is designed to facilitate professional performance in the field to acquire knowledge of the main developments in the sector.





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



General Objective

- ◆ Prepare students to be able to develop their work with total confidence and quality in the field of telecommunications, focused on Cell and Mobile Communications

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Get trained at the one of the world's leading private online universities”





Specific Objectives

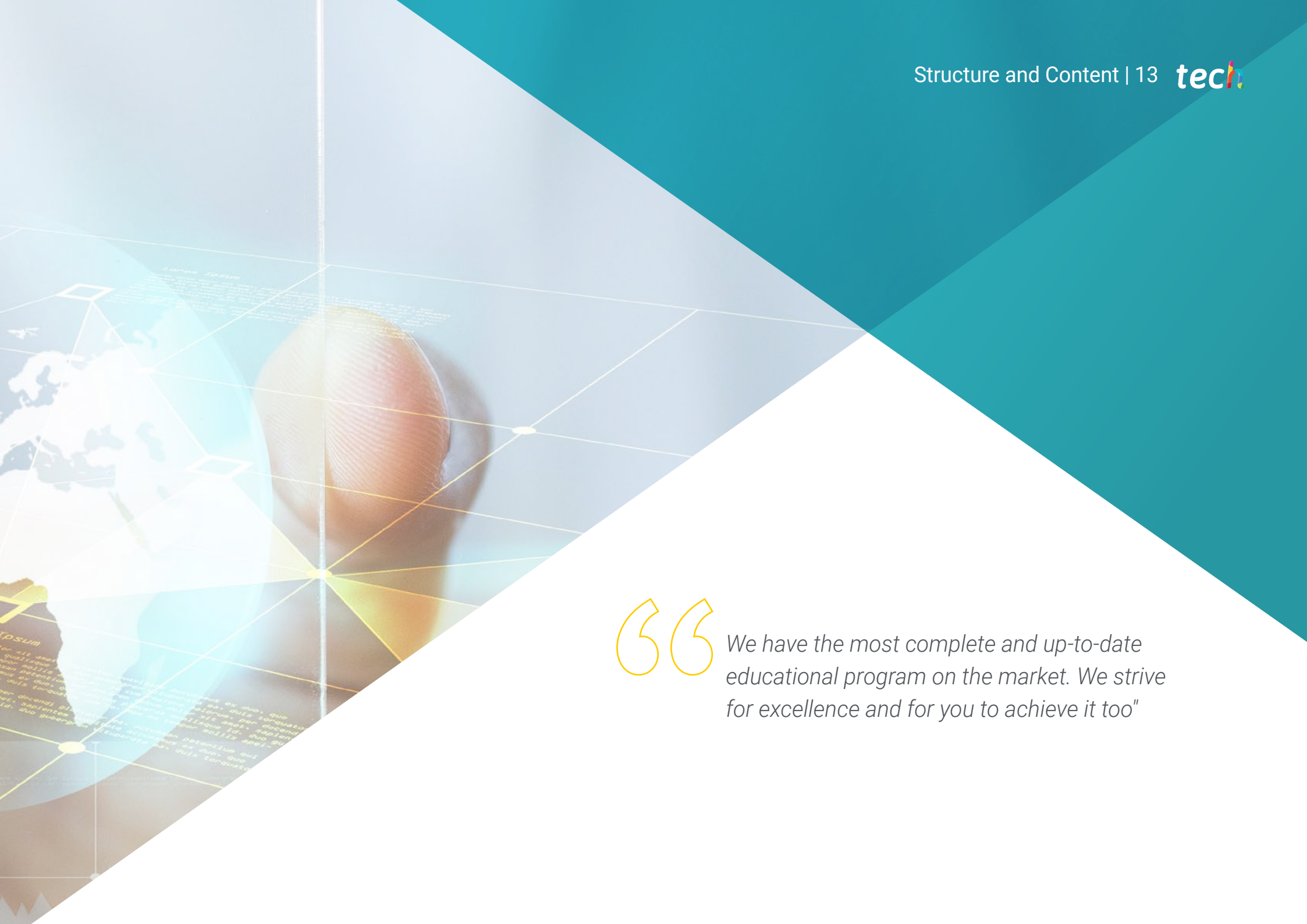
- ◆ Know the basics of Mobile Communication
- ◆ Describe the main services that mobile communications provide
- ◆ Know the architecture and organization of new communication networks with mobile access
- ◆ Expose the different generations of mobile telephony
- ◆ Understand the different aspects that are presented in digital mobile communication systems
- ◆ Assimilate security protocols and techniques for the proper functioning of mobile communications
- ◆ Analyze the evolutionary aspects of mobile technologies and their integration into current networks

03

Structure and Content

The structure of the contents has been designed by the best professionals in the from the engineering sector, with extensive experience and recognized prestige in the profession.





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

Module 1. Fundamentals of Mobile and Cell Network Communications

- 1.1. Introduction to Mobile Communication
 - 1.1.1. General Considerations
 - 1.1.2. Composition and Classification
 - 1.1.3. Frequency Bands
 - 1.1.4. Channel and Modulation Classes
 - 1.1.5. Radio Coverage, Quality and Capacity
 - 1.1.6. Evolution of Mobile Communications Systems
- 1.2. Fundamentals of the Radio Interface, Radiating Elements and Basic Parameters
 - 1.2.1. Physical Layer
 - 1.2.2. Radio Interface Fundamentals
 - 1.2.3. Noise in Mobile Systems
 - 1.2.4. Multiple Access Techniques
 - 1.2.5. Modulations Used in Mobile Communications
 - 1.2.6. Wave Propagation Modes
 - 1.2.6.1. Surface Wave
 - 1.2.6.2. Ionosphere Wave
 - 1.2.6.3. Spatial Wave
 - 1.2.6.4. Ionospheric and Tropospheric Effects
- 1.3. Wave Propagation through Mobile Channels
 - 1.3.1. Basic Characteristics of Propagation through Mobile Channels
 - 1.3.2. Evolution of Basic Propagation Loss Prediction Models
 - 1.3.3. Methods Based on Ray Theory
 - 1.3.4. Empirical Methods of Propagation Prediction
 - 1.3.5. Propagation Models for Microcells
 - 1.3.6. Multipath Channels
 - 1.3.7. Characteristics of Multipath Channels
- 1.4. SS7 Signalling System
 - 1.4.1. Signalling Systems
 - 1.4.2. SS7. SS7. Characteristics and Architecture
 - 1.4.3. Message Transfer Part (MTP)
 - 1.4.4. Signaling Control Part (SCCP)
 - 1.4.5. User Parts (TUP, ISUP)
 - 1.4.6. Application Parts (MAP, TCAP, INAP, etc.)
- 1.5. PMR and PAMR Systems. TETRA Systems
 - 1.5.1. Basic Concepts of a PMR Network
 - 1.5.2. Structure of a PMR Network
 - 1.5.3. Backbone Systems. PAMR
 - 1.5.4. TETRA Systems
- 1.6. Classic Cellular Systems (FDMA/TDM)
 - 1.6.1. Fundamentals of Cellular Systems
 - 1.6.2. Classic Cellular Concept
 - 1.6.3. Cellular Planning
 - 1.6.4. Geometry of Cellular Networks
 - 1.6.5. Cellular Division
 - 1.6.6. Dimensioning of a Cellular System
 - 1.6.7. Calculation of Interference in Cellular Systems
 - 1.6.8. Coverage and Interference in Real Cellular Systems
 - 1.6.9. Frequency Assignment in Cellular Systems
 - 1.6.10. Architecture of Cellular Networks
- 1.7. GSM System; Global System For Mobile Communications
 - 1.7.1. GSM Introduction. Origin and Evolution
 - 1.7.2. GSM Telecommunication Services
 - 1.7.3. Architecture of GSM Networks
 - 1.7.4. GSM Radio Interface: Channels, TDMA Structure and Bursts
 - 1.7.5. Modulation, Codification and Intertwined
 - 1.7.6. Transmission Properties
 - 1.7.7. Protocols



- 1.8. GPRS Service: General Packet Radio Service
 - 1.8.1. GPRS Introduction. Origin and Evolution
 - 1.8.2. General Features of the GPRS
 - 1.8.3. Architecture of GPRS Networks
 - 1.8.4. GPRS Radio Interface: Channels, TDMA Structure and Bursts
 - 1.8.5. Transmission Properties
 - 1.8.6. Protocols
- 1.9. UMTS (W-CDMA) System
 - 1.9.1. UMTS Origin. Characteristics of the 3rd Generation
 - 1.9.2. Architecture of UMTS Networks
 - 1.9.3. UMTS Radio Interface: Channels, Codes and Characteristics
 - 1.9.4. Modulation, Codification and Intertwined
 - 1.9.5. Transmission Properties
 - 1.9.6. Protocols and Services
 - 1.9.7. Capacity in UMTS
 - 1.9.8. Planning and Radio Link Balance
- 1.10. Cellular Systems: 3G, 4G and 5G Evolution
 - 1.10.1. Introduction
 - 1.10.2. Evolution towards 3G
 - 1.10.3. Evolution towards 4G
 - 1.10.4. Evolution towards 5G

“ *A unique, key, and decisive program 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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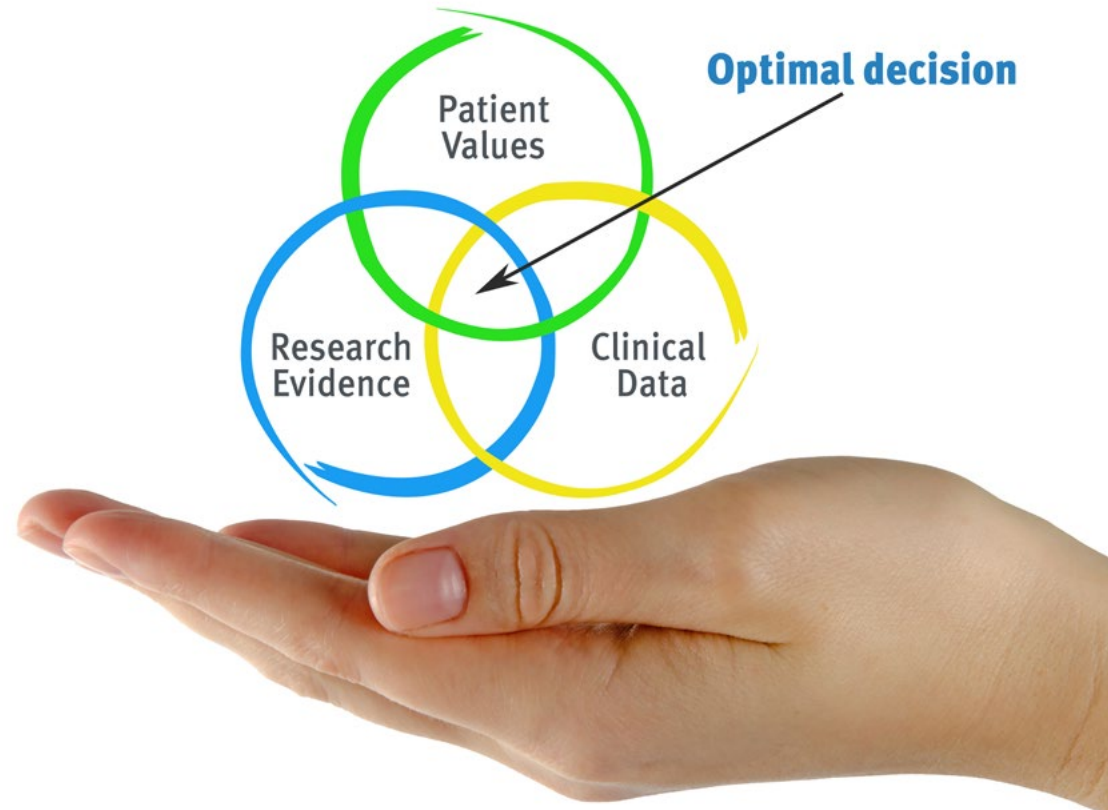
Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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.



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.



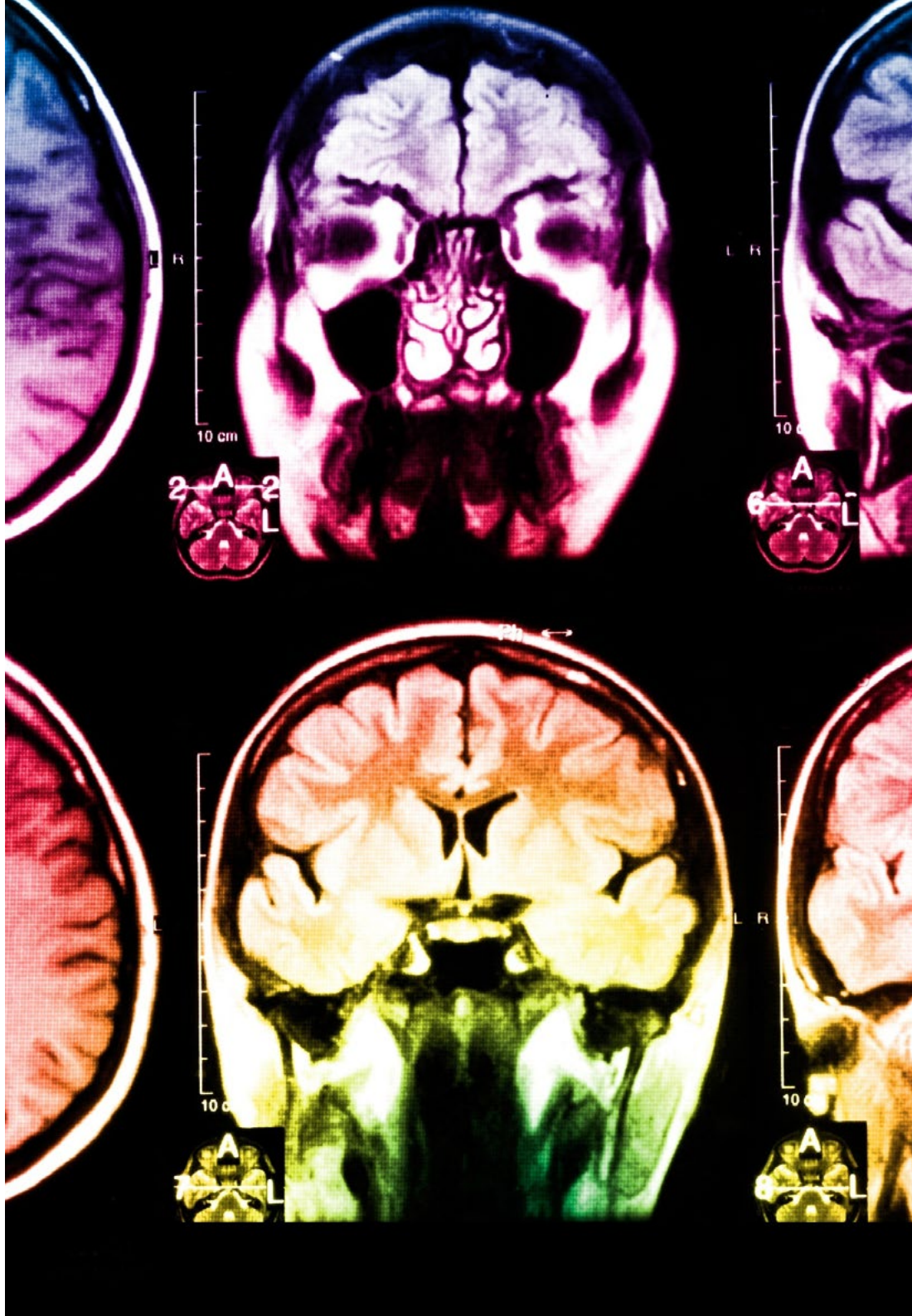
In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

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 adapted in 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.



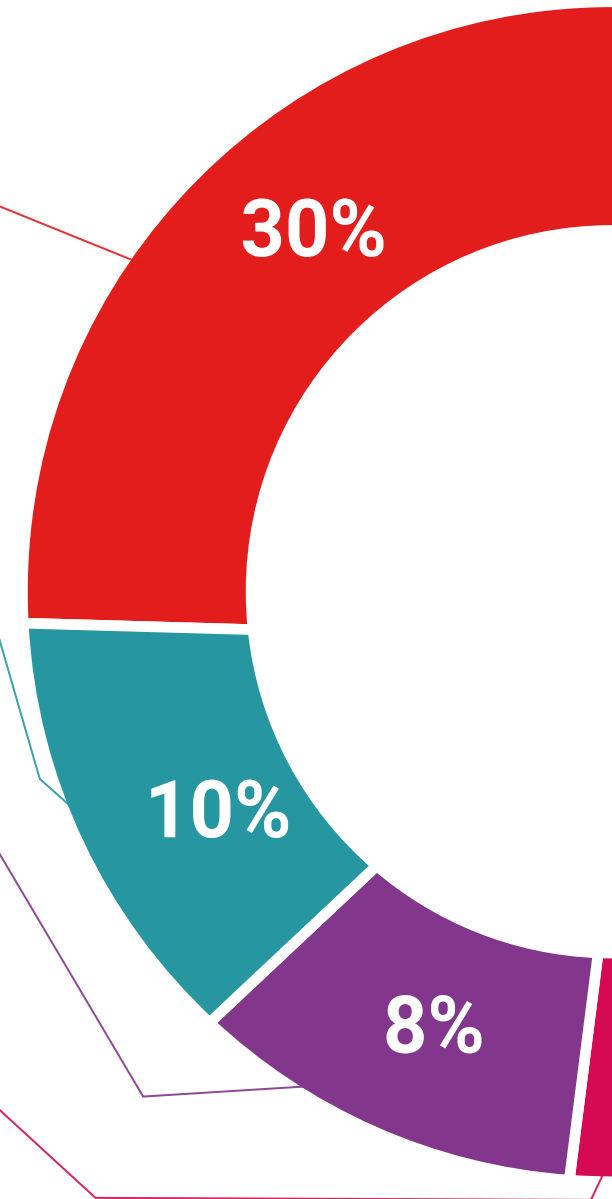
Practising Skills and Abilities

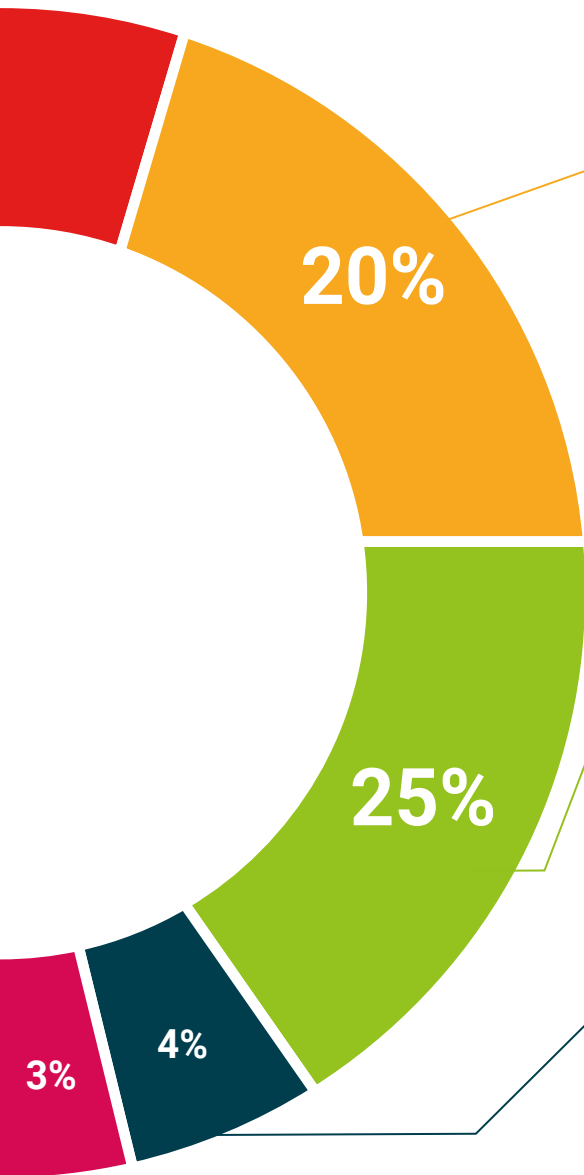
They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



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 Fundamentals of Mobile and Cell Network Communications guarantees students, in addition to the most rigorous and up-to-date education, access to a 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 Fundamentals of Mobile and Cell Network Communication** 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 Fundamentals of Mobile and Cell Network Communications**

Official N° of Hours: **150 h.**



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

future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present
development language
virtual classroom



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