Postgraduate Certificate

Artificial Intelligence and IoT Applications in Telemedicine

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Postgraduate Certificate
Artificial Intelligence and IoT Applications in Telemedicine

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

Website: **www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/artificial-intelligence-iot-applications-telemedicine**

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01

Introduction

The combination of Artificial Intelligence and the Internet of Things play an essential role in both the evolution and optimization of Telemedicine. Although these disciplines have been in place in medical practice for decades, their use grew in the wake of COVID-19. So much so that the World Health Organization presented a global strategy on digital health, aware of the relevance of these technologies. For this reason, the healthcare industry is demanding the incorporation of specialists in Machine Learning. To contribute to their correct specialization, TECH is developing a university program focused on this subject that will incorporate the latest advances that have occurred in this regard. All in a 100% online format!

A Postgraduate Certificate based on repetition, with a progressive teaching with which you will develop innovative solutions in Telemedicine and contribute to scientific research in this field"

A study published by a prestigious global investment banking and securities firm predicts that Artificial Intelligence systems will increase exponentially in all jobs. At the moment, the healthcare area is one of the professional sectors where advanced technologies are most used, one example being the Internet of Things. In this way, the world of Telemedicine takes advantage of Intelligent Systems to provide individualized assistance to users and monitor their state of health instantly. This is especially for people suffering from reduced mobility or serious conditions such as cancer or heart problems.

Its objective is to raise both the knowledge and practical skills of specialists to promote innovations in the healthcare field. To achieve this, the academic itinerary will delve into issues such as Remote Analysis of Results, Preventive Medicine or Algorithms for Image Processing. In this way, students will be nourished with the most cutting-edge techniques to develop devices or applications that improve the well-being of individuals. In this way, students will learn the most cutting-edge techniques to develop devices or applications that improve the well-being of individuals. Likewise, the syllabus will delve into the proper handling of Nanorobots with which to diagnose diseases and carry out the appropriate treatments.

The university program stands out for providing students with a library full of multimedia didactic resources, as well as specialized readings and clinical case studies that will allow students to integrate into their daily practice the most effective strategies or tools to contribute to the recovery of sick subjects. Undoubtedly, a unique opportunity for professionals to keep abreast of advances in Telemedicine and Artificial Intelligence through a convenient 100% online format. In addition, the only thing students will need to access the Virtual Campus is an electronic device with an Internet connection, even their own smartphone will do.

This **Postgraduate Certificate in Artificial Intelligence and IoT Applications in Telemedicine** contains the most complete and up-to-date program on the market. The most important features include:

- The development of practical cases presented by experts in applications of Artificial Intelligence in Telemedicine
- The graphical, schematic and practical contents with which it is conceived gather technological and practical information on those disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- 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

Enrich your professional practice by incorporating recent technological advances in the field of Nanotechnology"

You will develop the most innovative Artificial Intelligence Algorithms for the processing of medical images and help physicians in the diagnosis of diseases"

You will acquire a solid understanding of the ethical issues involved in handling sensitive data and automated clinical decision making.

With this program you will learn at your own speed and without time obstacles, thanks to the Relearning system conceived by TECH.

The program's teaching staff includes professionals from the sector who contribute their work experience to this 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, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

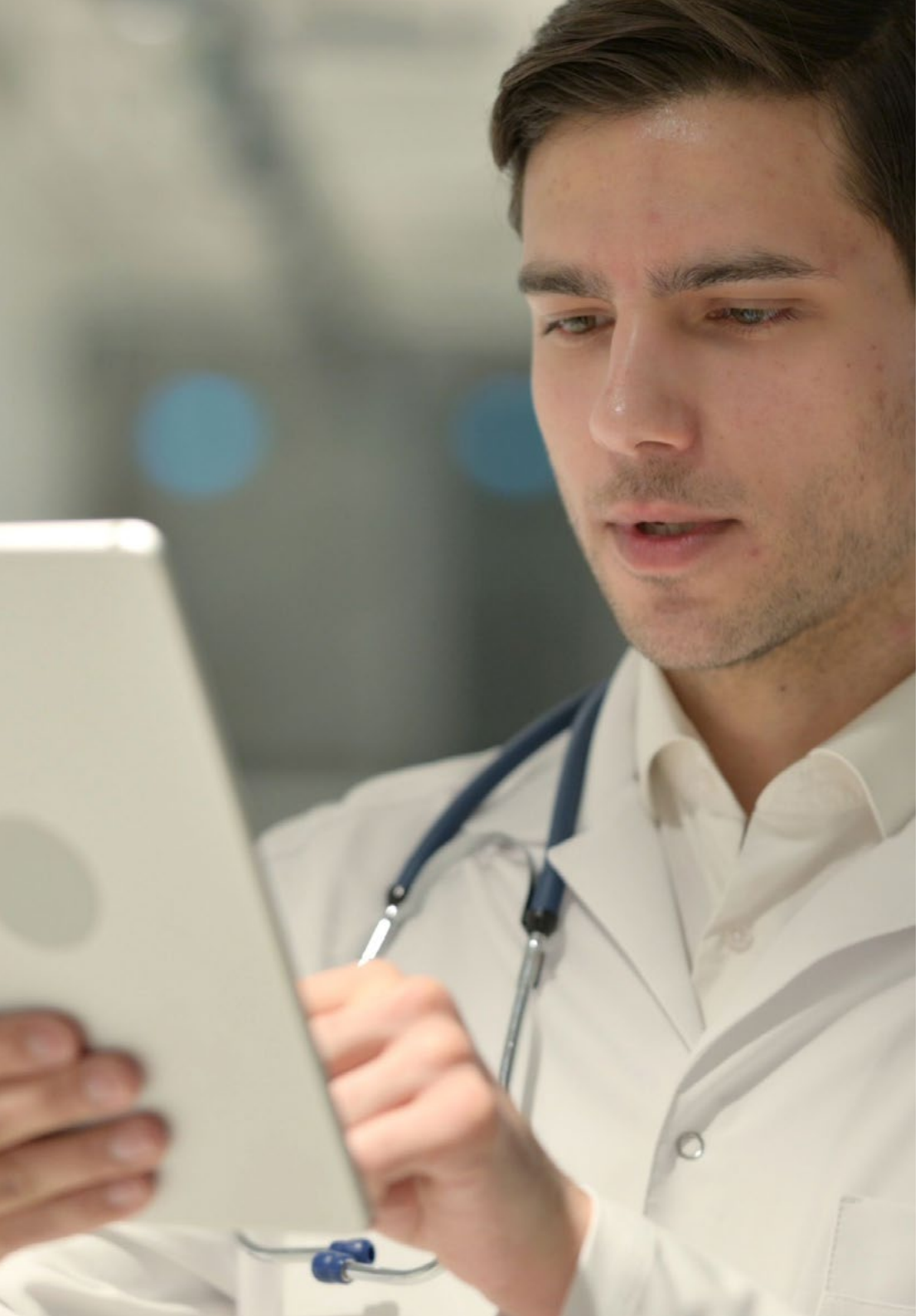
Objectives

This university program will boost the employability of graduates in emerging technological fields such as Artificial Intelligence, e-Health and the Internet of Things. At the end of this program, students will nurture their usual procedures with the most innovative tools to provide personalized Telemedicine services. In this sense, they will skillfully handle instruments for the prevention and monitoring of patients' clinical status remotely. It is worth noting that professionals will be highly prepared to develop innovative solutions such as wellness applications or devices to assess the health of users accurately.

This university program will bring you closer to your professional goals, equipping you with innovative resources to overcome today's challenges in Vital Signs Monitoring"

General Objectives

- Delve into key concepts of medicine that serve as a vehicle to understand clinical medicine
- Determine the major diseases affecting the human body classified by apparatus or systems, structuring each module into a clear outline of pathophysiology, diagnosis, and treatment
- Determine how to obtain metrics and tools for healthcare management
- Understand the basics of basic and translational scientific methodology
- Examine the ethical and best practice principles governing the different types of research in health sciences
- Identify and generate the means of funding, assessing and disseminating scientific research
- Locate the real clinical applications of the various techniques
- Develop the key concepts of computational science and theory
- Determine the applications of computation and its implication in bioinformatics
- Provide the necessary resources to practically apply all the concepts in the modules
- Provide the fundamental concepts of databases
- Determine the importance of medical databases
- Delve into the most important techniques in research
- Identify the opportunities offered by the IoT in the field of *e-Health*
- Provide specialized knowledge of the technologies and methodologies used in the design, development and assessment of telemedicine systems
- Determine the different types and applications of telemedicine
- Study the most common ethical aspects and regulatory frameworks of telemedicine
- Analyze the use of medical devices
- Develop the key concepts of entrepreneurship and innovation in *e-Health*
- Determine what a business model is and the types that exist



Specific Objectives

- Propose communication protocols in different scenarios in the healthcare field
- Analyze IoT communication, as well as its application areas in *e-Health*
- Substantiate the complexity of artificial intelligence models in its use in healthcare
- Present all the Cloud technologies available to develop *e-Health* and IoT products, both in computing and communication

You will obtain technical skills that will allow you to design, implement and evaluate Artificial Intelligence systems for Telemedicine applications"

03

Course Management

TECH's priority is to preserve the excellent quality that characterizes its university programs, with the objective that these educational experiences guarantee the professional development of its students. Therefore, for this Postgraduate Certificate it has the support of a first class teaching staff. These professionals are highly specialized in Artificial Intelligence, e-Health and Big Data. In addition, they stand out for their extensive professional background, where they have provided innovative solutions to renowned companies. Thanks to this, these experts have designed first-class academic materials to guarantee students a dynamic and enriching learning experience.

You will have the opportunity to consult all your doubts directly with the teaching staff, who will provide you with personalized tutoring adapted to your own needs and demands"

Management

Ms. Sirera Pérez, Ángela

- Biomedical Engineer expert in Nuclear Medicine and exoskeleton design
- Designer of specific parts for 3D printing at Technadi
- Technician in the Nuclear Medicine area of the University Clinic of Navarra
- Degree in Biomedical Engineering from the University of Navarra
- MBA and Leadership in Healthcare and Medical Technology Companies

Professors

Ms. Muñoz Gutiérrez, Rebeca

- Data *Scientist* at INDITEX
- *Firmware Engineer* for Clue Technologies
- Graduate in Health Engineering, specializing in Biomedical Engineering from the University of Malaga and the University of Seville
- Master's Degree in Intelligent Avionics, Clue Technologies, in collaboration with the University of Málaga
- NVIDIA: *Fundamentals of Accelerated Computing with CUDA C/C++*
- NVIDIA: Accelerating CUDA C++ *Applications with Multiple* GPU

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Structure and Content

This Postgraduate Certificate will provide students with the fundamentals of Telemedicine and its relationship with Artificial Intelligence to improve the quality of life of patients. The syllabus will cover aspects such as the e-Health Platform, Remote Analysis of Results or the Chatbox interface. In this way, the students will perform functions such as the monitoring of users with cardiac pathologies and the diagnosis of diseases by images. The program will also delve into the Internet of Things in order to provide you with a technological infrastructure.

You will use the most sophisticated technologies aimed at monitoring oncology patients, improving both their quality of life and the efficiency of the health care system"

Module 1. Applications of Artificial Intelligence and the Internet of Things (IoT) in Telemedicine

1.1. E-Health Platforms. Personalizing Healthcare Services
- 1.1.1. e-Health Platforms:
- 1.1.2. Resources for e-Health Platforms
- 1.1.3. Digital Europe Program. Digital Europe-4-Health and Horizon Europe

1.2. Artificial Intelligence in Healthcare I: New Solutions in Computer Applications
- 1.2.1. Remote Analysis of Results
- 1.2.2. Chatbox
- 1.2.3. Prevention and Real-Time Monitoring
- 1.2.4. Preventive and Personalized Medicine in Oncology

1.3. Artificial Intelligence in Healthcare II:
- 1.3.1. Monitoring Patients with Reduced Mobility
- 1.3.2. Cardiac Monitoring, Diabetes, Asthma
- 1.3.3. Health and Wellness Apps
  - 1.3.3.1. Heart Rate Monitors
  - 1.3.3.2. Blood Pressure Bracelets
- 1.3.4. Ethical Use of AI in the Medical Field. Data Protection

1.4. Artificial Intelligence Algorithms for Image Processing
- 1.4.1. Artificial Intelligence Algorithms for Image Handling
- 1.4.2. Image Diagnosis and Monitoring in Telemedicine
  - 1.4.2.1. Melanoma Diagnosis
- 1.4.3. Limitations and Challenges in Image Processing in Telemedicine

1.5. Application Acceleration using Graphics Processing Units (GPU) in Medicine
- 1.5.1. Program Parallelization
- 1.5.2. GPU Operations
- 1.5.3. Application Acceleration using GPU in Medicine

1.6. Natural Language Processing (NLP) in Telemedicine
- 1.6.1. Text Processing in the Medical Field. Methodology
- 1.6.2. Natural Language Processing in Therapy and Medical Records
- 1.6.3. Limitations and Challenges in Natural Language Processing in Telemedicine

1.7. The Internet of Things (IoT) in Telemedicine. Applications
- 1.7.1. Monitoring Vital Signs. Wearables
  - 1.7.1.1. Blood Pressure, Temperature, and Heart Rate
- 1.7.2. The IoT and Cloud Technology
  - 1.7.2.1. Data Transmission to the Cloud
- 1.7.3. Self-Service Terminals

1.8. IoT in Patient Monitoring and Care
- 1.8.1. IoT Applications for Emergency Detection
- 1.8.2. The Internet of Things in Patient Rehabilitation
- 1.8.3. Artificial Intelligence Support in Victim Recognition and Rescue

1.9. Nano-Robots. Typology
- 1.9.1. Nanotechnology
- 1.9.2. Types of Nano-Robots
  - 1.9.2.1. Assemblers. Applications
  - 1.9.2.2. Self-Replicating. Applications

1.10. Artificial Intelligence in COVID-19 Control
- 1.10.1. COVID-19 and Telemedicine
- 1.10.2. Management and Communication of Breakthroughs and Outbreaks
- 1.10.3. Outbreak Prediction in Artificial Intelligence

You can access the virtual platform at the time of your choice and you can even download the didactic contents to consult them whenever you want"

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.

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

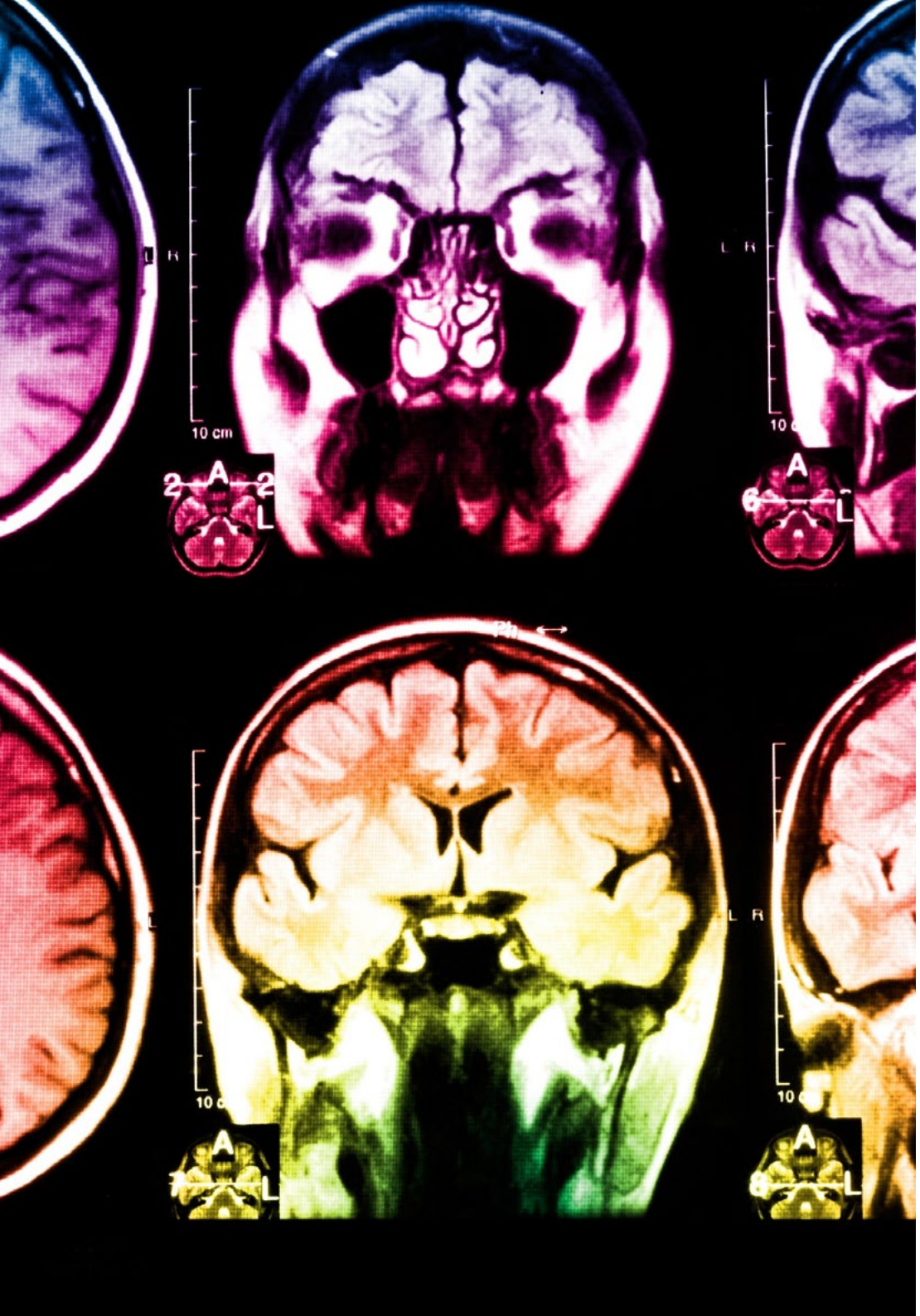
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

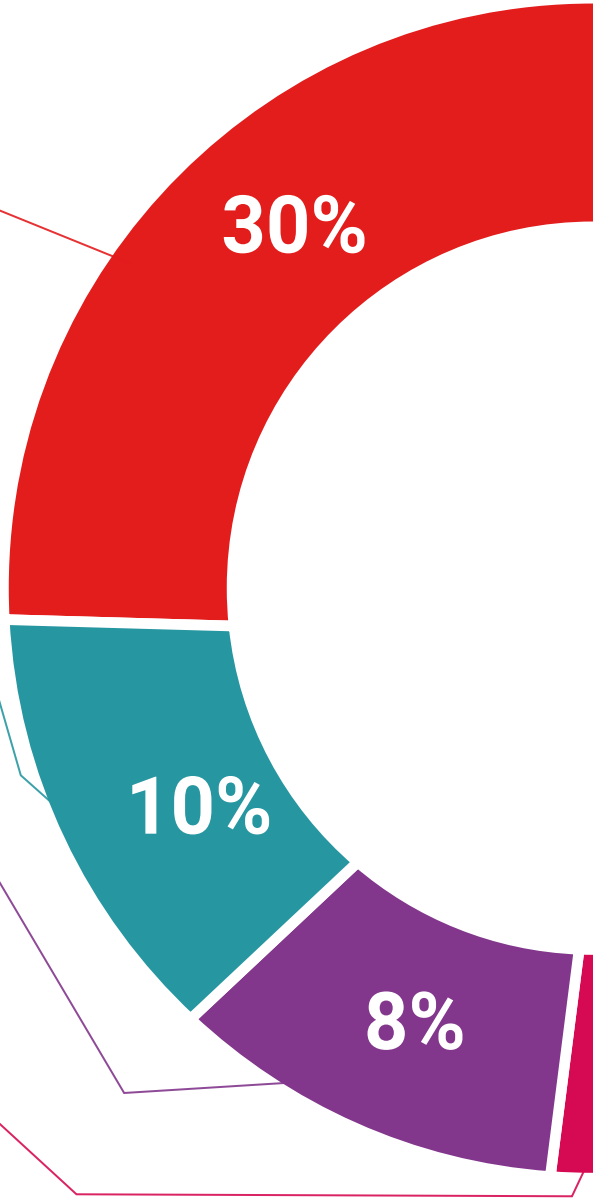
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

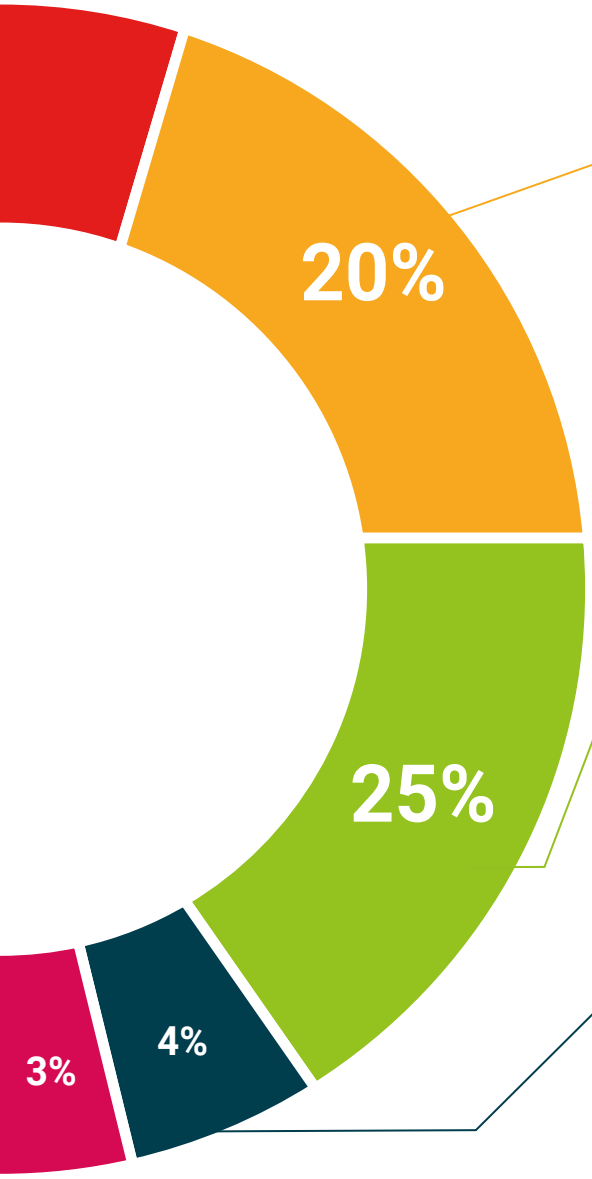
Practising Skills and Abilities

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.

06

Certificate

The Postgraduate Certificate in Artificial Intelligence and IoT Applications in Telemedicine 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 Artificial Intelligence and IoT Applications in Telemedicine** 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 Artificial Intelligence and IoT Applications in Telemedicine**

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

Artificial Intelligence and IoT Applications in Telemedicine

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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