Postgraduate Certificate

Ethics and Regulation in Medical Artificial Intelligence

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Postgraduate Certificate
Ethics and Regulation in Medical Artificial Intelligence

- 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/ethics-regulation-medical-artificial-intelligence**

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01

Introduction

Artificial Intelligence (AI) can have a major influence on critical medical care and decision making. For that reason, it is vital that experts develop an ethical awareness to ensure procedures that safeguard users' privacy. To maintain patients' trust, professionals have to certify the protection of health data at all times. However, this is a challenge given the rapid evolution of technology. This is why regulatory frameworks need to be flexible enough to deal with these frequent modifications. Against this backdrop, TECH has developed advanced digital program on the adoption of ethical principles in the use of AI systems.

Delve into the sustainable development of Artificial Intelligence and its impact on Medicine through TECH, the best digital university in the world according to Forbes"

Throughout their medical procedures, physicians access confidential patient information in order to effectively design their therapies. In this regard, their responsibilities include safeguarding user confidentiality in AI environments. Otherwise, experts could face serious consequences ranging from financial penalties to loss of their license to practice. For this reason, it is essential for specialists to develop privacy policies aimed at protecting sensitive data.

For this reason, TECH implements a Postgraduate Certificate that will address in detail the integration of ethical values in AI-assisted decision making in medical contexts. The academic itinerary will delve into the guarantee of informed consent in both the collection and use of patients' personal data. Practitioners will learn multiple strategies for sustainable practices in the development and maintenance of AI systems. In this way, your procedures will comply with international data governance and regulatory frameworks. In addition, the learning materials will encourage continuous evaluation of security policies to adapt to technological advances.

All this, through didactic material based on interactive summaries of each topic, videos in detail, complementary readings and case studies to which experts will have access, comfortably, whenever and wherever they wish. Professionals taking this program only need an electronic device with an Internet connection to view, at any time of the day, the content hosted on the virtual platform. Undoubtedly, this is an ideal academic option for those seeking a first-class update through a quality program that facilitates self-management of study time.

This **Postgraduate Certificate in Ethics and Regulation in Medical Artificial Intelligence** 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 Artificial Intelligence in Clinical Practice
- 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 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

The incorporation of ethical considerations in your daily practice, applying Machine Learning, will drive more ethical and committed medical advances"

You will develop sound ethical principles to AI in Clinical Research, contributing to fairer, more transparent and socially responsible medical advances"

You will delve into the management of informed consent and responsibility in research, in the context of advanced technologies in the biomedical field.

Take advantage of all the benefits of the Relearning methodology, which will allow you to organize your time and pace of study, adapting to your schedule.

The program's teaching staff includes professionals from the industry 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.

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Objectives

This study will provide specialists with a solid understanding of the ethical foundations related to AI in the medical context. Professionals will master the principles of data governance, thus ensuring that their healthcare praxis complies with the regulatory framework. Graduates will also nurture their procedures by gaining new skills aimed at designing Intelligent Computing with a focus on people. In addition, physicians will be characterized by carrying out processes of transparency and quality to provide medical excellence to patients.

You will develop Medical Machine Learning Models that Promote Fairness and Transparency"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence
- Study the different types of data and understand the data lifecycle
- Evaluate the crucial role of data in the development and implementation of AI solutions
- Delve into algorithms and complexity to solve specific problems
- Explore the theoretical basis of neural networks for *Deep Learning* development
- Analyze bio-inspired computing and its relevance in the development of intelligent systems
- Analyze current strategies of Artificial Intelligence in various fields, identifying opportunities and challenges
- Critically evaluate the benefits and limitations of AI in healthcare, identifying potential pitfalls and providing an informed assessment of its clinical application
- Recognize the importance of collaboration across disciplines to develop effective AI solutions
- Gain a comprehensive perspective on emerging trends and technological innovations in AI applied to healthcare
- Acquire solid knowledge in medical data acquisition, filtering, and preprocessing
- Understand the ethical principles and legal regulations applicable to the implementation of AI in medicine, promoting ethical practices, fairness, and transparency

Specific Objectives

- Understand the fundamental ethical principles and legal regulations applicable to the implementation of AI in medicine
- Master the principles of data governance
- Understand international and local regulatory frameworks
- Ensure regulatory compliance in the use of AI data and tools in the healthcare sector
- Develop skills to design human-centered AI systems, promoting fairness and transparency in machine learning

A program that will allow you to exercise in simulated environments, so that you can achieve immersive learning with which you can specialize in real situations"

03

Course Management

.TECH has carefully selected the best specialists for the design of this academic program in ethics and regulation in medical Machine Learning. With a wide professional experience behind them, working day by day in the most important hospitals in the mentioned care, these teachers will share with the doctor the most innovative procedures and tools to carry out their work. All with the objective of achieving a high quality and international specialization.

An versed teaching group will guide you throughout the learning process and will resolve any doubts that may arise"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shephers GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- Ph.D. in Psychology from the University of Castilla - La Mancha
- Ph.D. in Economics, Business and Finance from the Camilo José Cela University
- Ph.D. in Psychology from University of Castilla – La Mancha
- Máster in Executive MBA por la Universidad Isabel I
- Master's Degree in Sales and Marketing Management, Isabel I University
- Expert Master's Degree in Big Data by Hadoop Training
- Master's Degree in Advanced Information Technologies from the University of Castilla - la Mancha
- Member of: SMILE Research Group

Mr. Martín-Palomino Sahagún, Fernando

- *Chief Technology Officer* and R+D+i Director at AURA Diagnostics (medTech)
- Business Development at SARLIN
- Operations Director at Alliance Diagnostics
- Innovation Director at Alliance Diagnostics
- *Chief Information Officer* at Alliance Medical
- *Field Engineer & Project Management* in Digital Radiology at Kodak
- MBA at Polytechnic University of Madrid
- *Executive Master's Degree* in Marketing and Sales, ESADE
- Telecommunications Engineer from the University Alfonso X El Sabio

Professors

Dr. Carrasco González, Ramón Alberto

- Computer Science and Artificial Intelligence Specialist
- Researcher
- Head of *Business Intelligence* (Marketing) at Caja General de Ahorros de
- Granada and at el Banco Mare Nostrum
- Head of Information Systems (*Data Warehousing and Business Intelligence*) at Caja General de Ahorros de Granada and Banco Mare Nostrum
- Ph.D. in Artificial Intelligence, University of Granada
- Computer Engineer from the University of Granada

Mr. Popescu Radu, Daniel Vasile

- Pharmacology, Nutrition and Diet Specialist
- Freelance Producer of Didactic and Scientific Contents
- Nutritionist and Community Dietitian
- Community Pharmacist
- Researcher
- Master's Degree in Nutrition and Health at the Universidad Oberta de Catalunya
- Master's Degree in Psychopharmacology, University of Valencia
- Pharmacist by the Complutense University of Madrid
- Nutritionist-Dietician by the European University Miguel de Cervantes

04

Structure and Content

This university program will provide graduates with an in-depth knowledge of the ethical, privacy and regulatory aspects related to the implementation of AI in the healthcare environment. The curriculum will delve into the guarantee of informed consent in the collection and use of personal data in the medical field. The syllabus will also encourage professionals to ensure principles of transparency and rigor during the system validation phase. In the same vein, the learning materials will address a wide range of strategies for risk mitigation and ethical responsibility in AI applications in medicine.

Update your knowledge in the sustainable development of Artificial Intelligence through innovative multimedia content"

Module 1. Ethics and Regulation in Medical AI

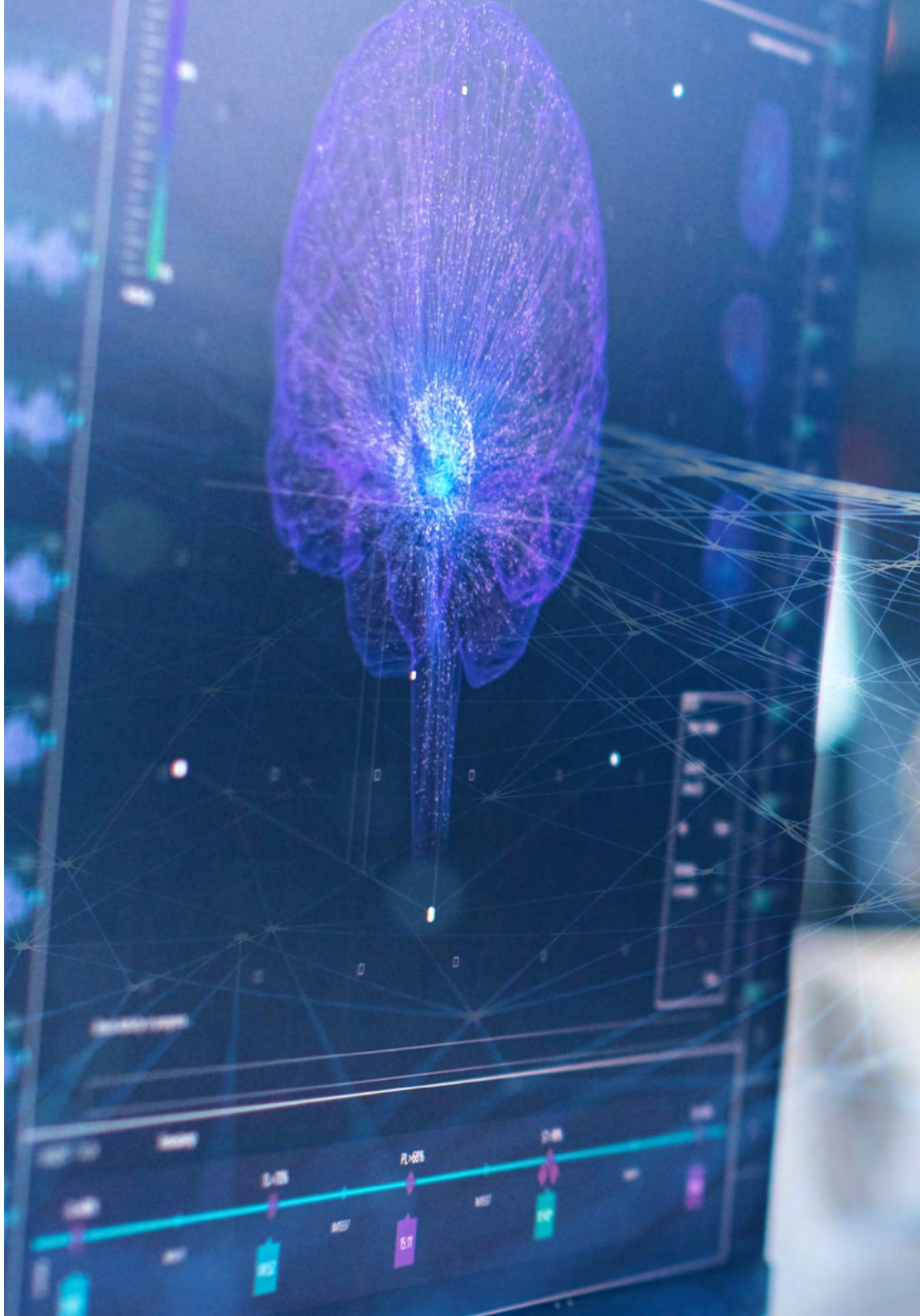
1.1. Ethical Principles in the Use of AI in Medicine
- 1.1.1. Analysis and Adoption of Ethical Principles in the Development and Use of Medical AI Systems
- 1.1.2. Integration of Ethical Values in AI-assisted Decision Making in Medical Contexts
- 1.1.3. Establishment of Ethical Guidelines to Ensure Responsible Use of Artificial Intelligence in Medicine

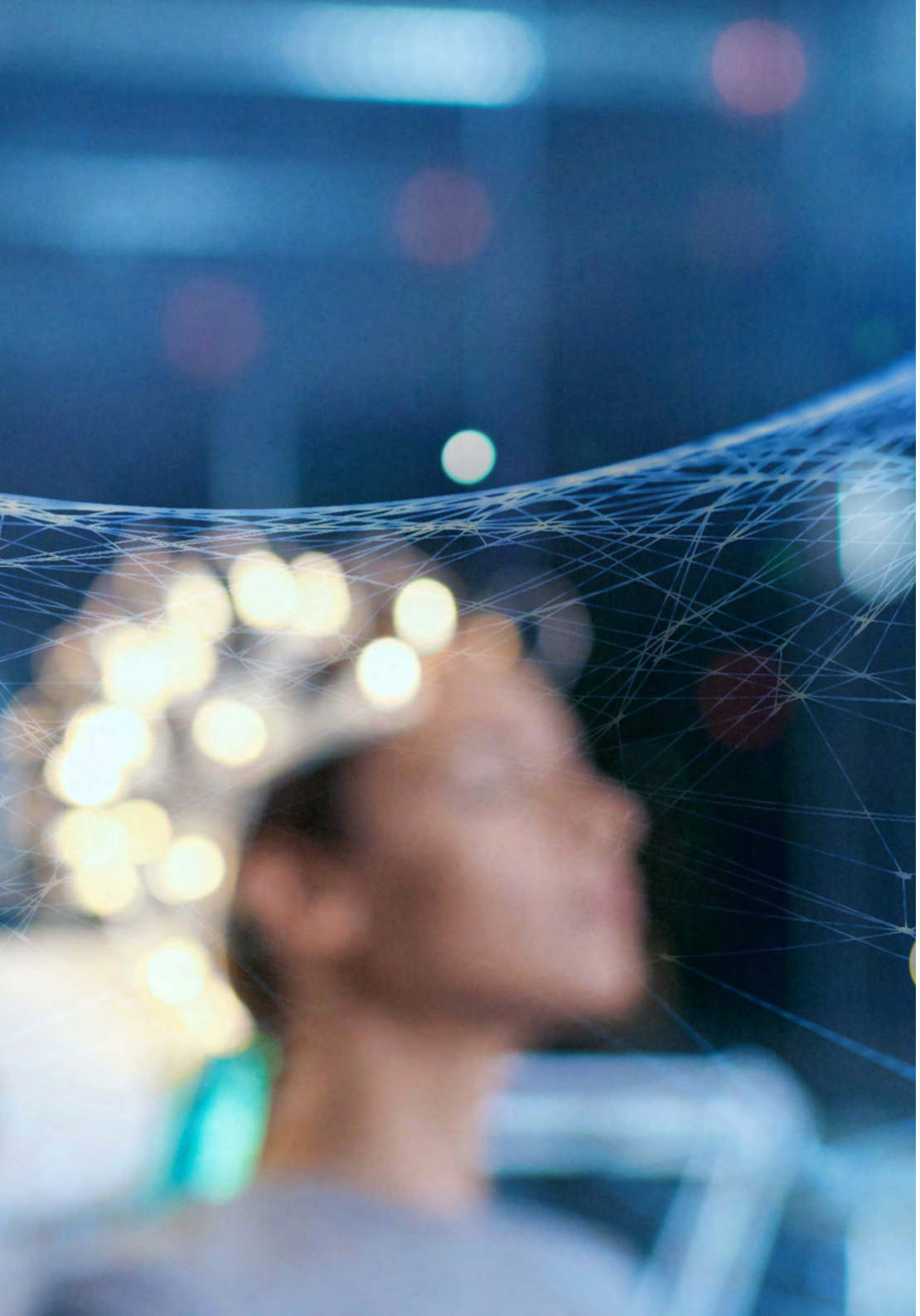
1.2. Data Privacy and Consent in Medical Contexts
- 1.2.1. Development of Privacy Policies to Protect Sensitive Data in Medical AI Applications
- 1.2.2. Ensuring Informed Consent in the Collection and Use of Personal Data in Medical Settings
- 1.2.3. Implementing Security Measures to Safeguard Patient Privacy in Medical AI Environments

1.3. Ethics in the Research and Development of Medical AI Systems
- 1.3.1. Ethical Evaluation of Research Protocols in the Development of AI Health Systems
- 1.3.2. Ensuring Transparency and Ethical Rigor in the Development and Validation Phases of Medical AI Systems
- 1.3.3. Ethical Considerations in the Publication and Sharing of Results in the Field of Medical AI

1.4. Social Impact and Accountability in AI for Health
- 1.4.1. Analysis of the Social Impact of AI in Health Care Delivery
- 1.4.2. Development of Strategies to Mitigate Risks and Ethical Responsibility in AI Applications in Medicine
- 1.4.3. Continuous Evaluation of the Social Impact and Adaptation of AI Systems to Make a Positive Contribution to Public Health

1.5. Sustainable Development of AI in the Health Sector
- 1.5.1. Integration of Sustainable Practices in the Development and Maintenance of AI Systems in Health
- 1.5.2. Assessment of the Environmental and Economic Impact of AI Technologies in the Health Sector
- 1.5.3. Development of Sustainable Business Models to Ensure Continuity and Improvement of AI Solutions in Healthcare





1.6. Data Governance and International Regulatory Frameworks in Medical AI
- 1.6.1. Development of Governance Frameworks for Ethical and Efficient Data Management in Medical AI Applications
- 1.6.2. Adaptation to International Standards and Regulations to Ensure Ethical and Legal Compliance
- 1.6.3. Active Participation in International Initiatives to Establish Ethical Standards in the Development of Medical AI Systems

1.7. Economic Aspects of AI in the Healthcare Field
- 1.7.1. Analysis of Economic and Cost-Benefit Implications in the Implementation of AI Systems in Healthcare
- 1.7.2. Development of Business and Financing Models to Facilitate the Adoption of AI Technologies in the Healthcare Sector
- 1.7.3. Assessment of Economic Efficiency and Equity in Access to AI-driven Health Services

1.8. Human-centered Design of Medical AI Systems
- 1.8.1. Integration of Human-Centered Design Principles to Improve Usability and Acceptability of Medical AI Systems
- 1.8.2. Involvement of Healthcare Professionals and Patients in the Design Process to Ensure Relevance and Effectiveness of Solutions
- 1.8.3. Continuous Evaluation of User Experience and Feedback to Optimize Interaction with AI Systems in Medical Settings

1.9. Fairness and Transparency in Medical Machine Learning
- 1.9.1. Development of Medical Machine Learning Models that Promote Fairness and Transparency
- 1.9.2. Implementation of Practices to Mitigate Bias and Ensure Fairness in the Application of AI Algorithms in Healthcare
- 1.9.3. Continued Assessment of Fairness and Transparency in the Development and Deployment of Machine Learning Solutions in Medicine

1.10. Safety and Policy in the Deployment of AI in Medicine
- 1.10.1. Development of Security Policies to Protect Data Integrity and Confidentiality in Medical AI Applications
- 1.10.2. Implementation of Safety Measures in the Deployment of AI Systems to Prevent Risks and Ensure Patient Safety
- 1.10.3. Continuous Evaluation of Safety Policies to Adapt to Technological Advances and New Challenges in the Deployment of AI in Medicine

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

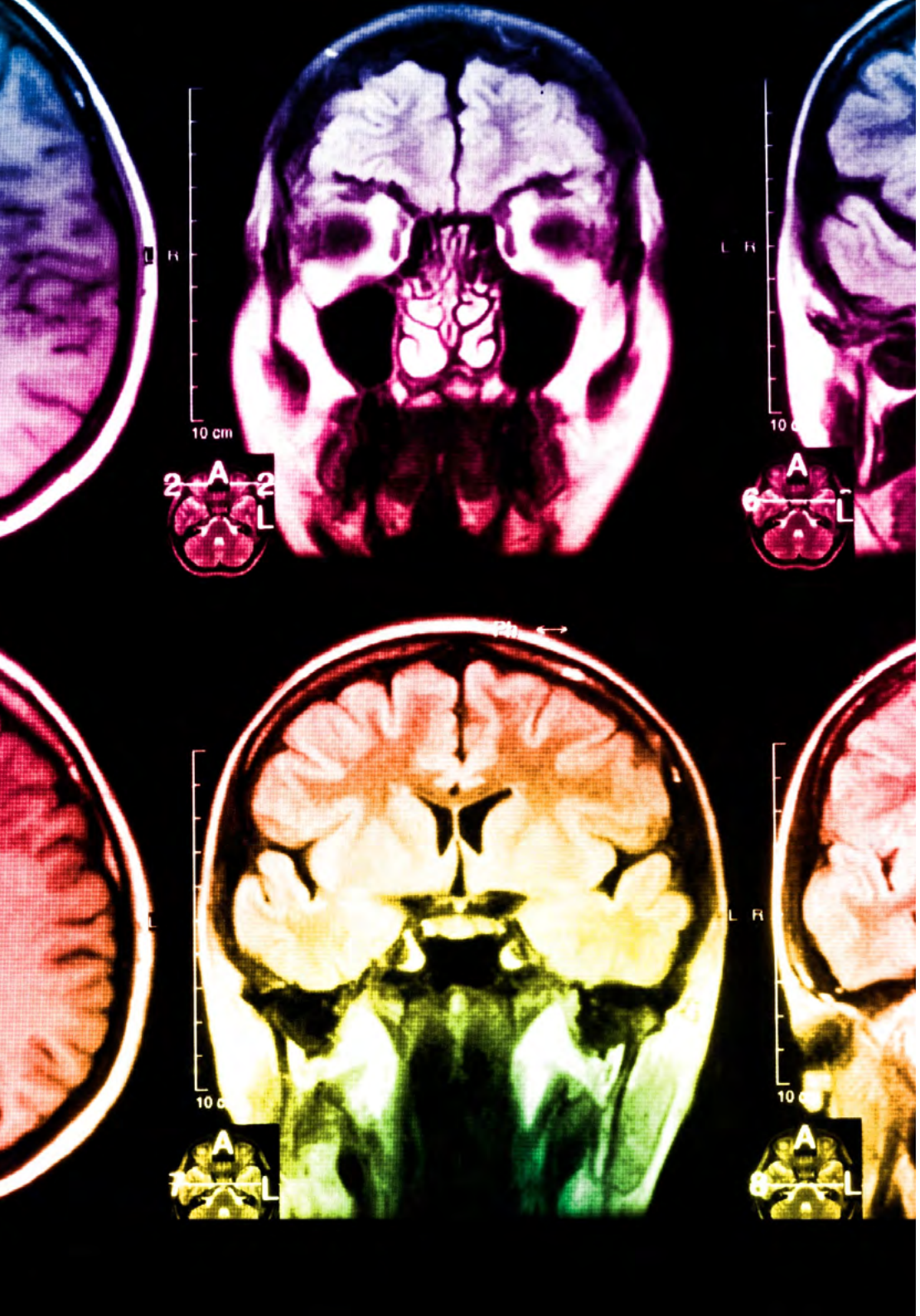
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

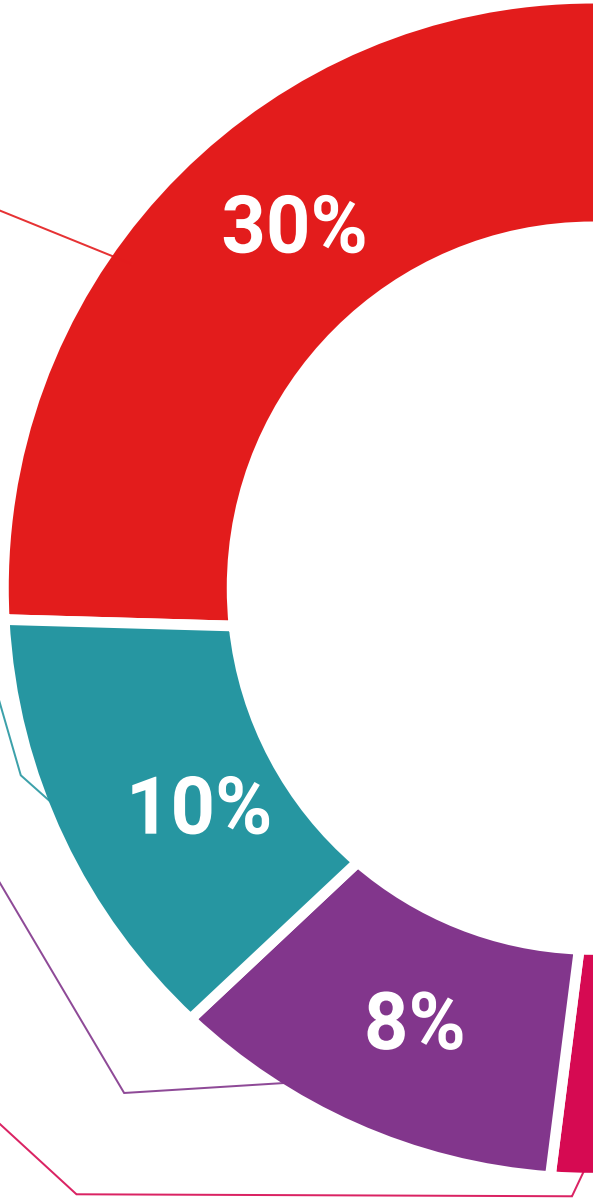
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

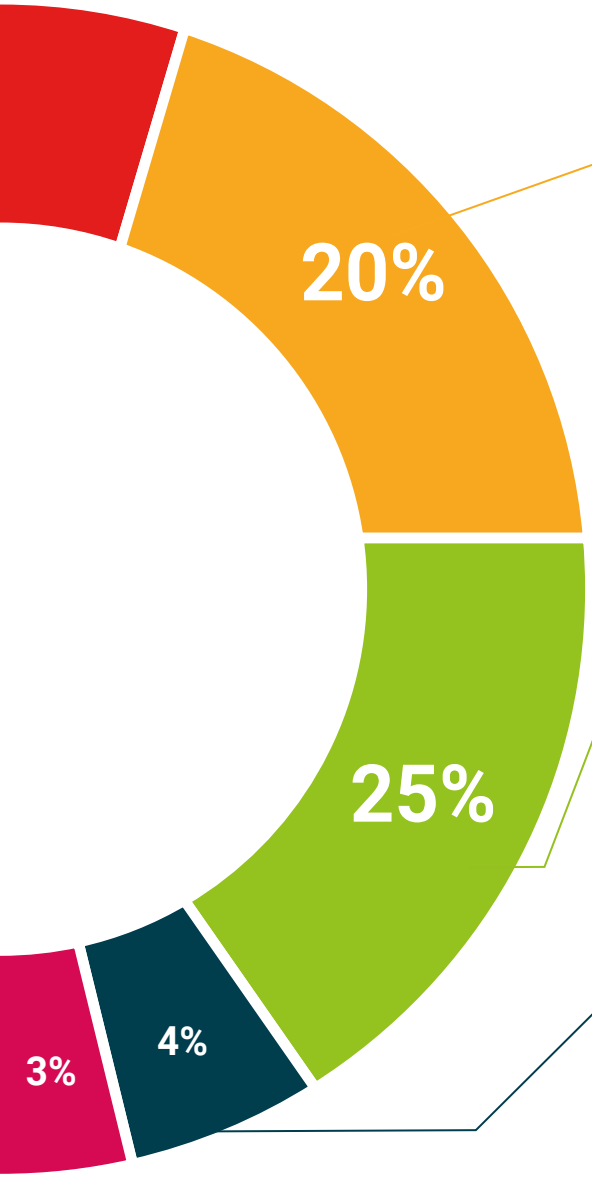
Practising Skills and Abilities

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 Ethics and Regulation in Medical Artificial Intelligence 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 Ethics and Regulation in Medical Artificial Intelligence** 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 Ethics and Regulation in Medical Artificial Intelligence**

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

Ethics and Regulation in Medical Artificial Intelligence

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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Postgraduate Certificate

Ethics and Regulation in Medical Artificial Intelligence

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