

# Postgraduate Certificate Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry



## Postgraduate Certificate Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/artificial-intelligence/postgraduate-certificate/diagnosis-treatment-strategies-artificial-intelligence-dentistry](http://www.techtute.com/us/artificial-intelligence/postgraduate-certificate/diagnosis-treatment-strategies-artificial-intelligence-dentistry)

# Index

01

Introduction

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*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

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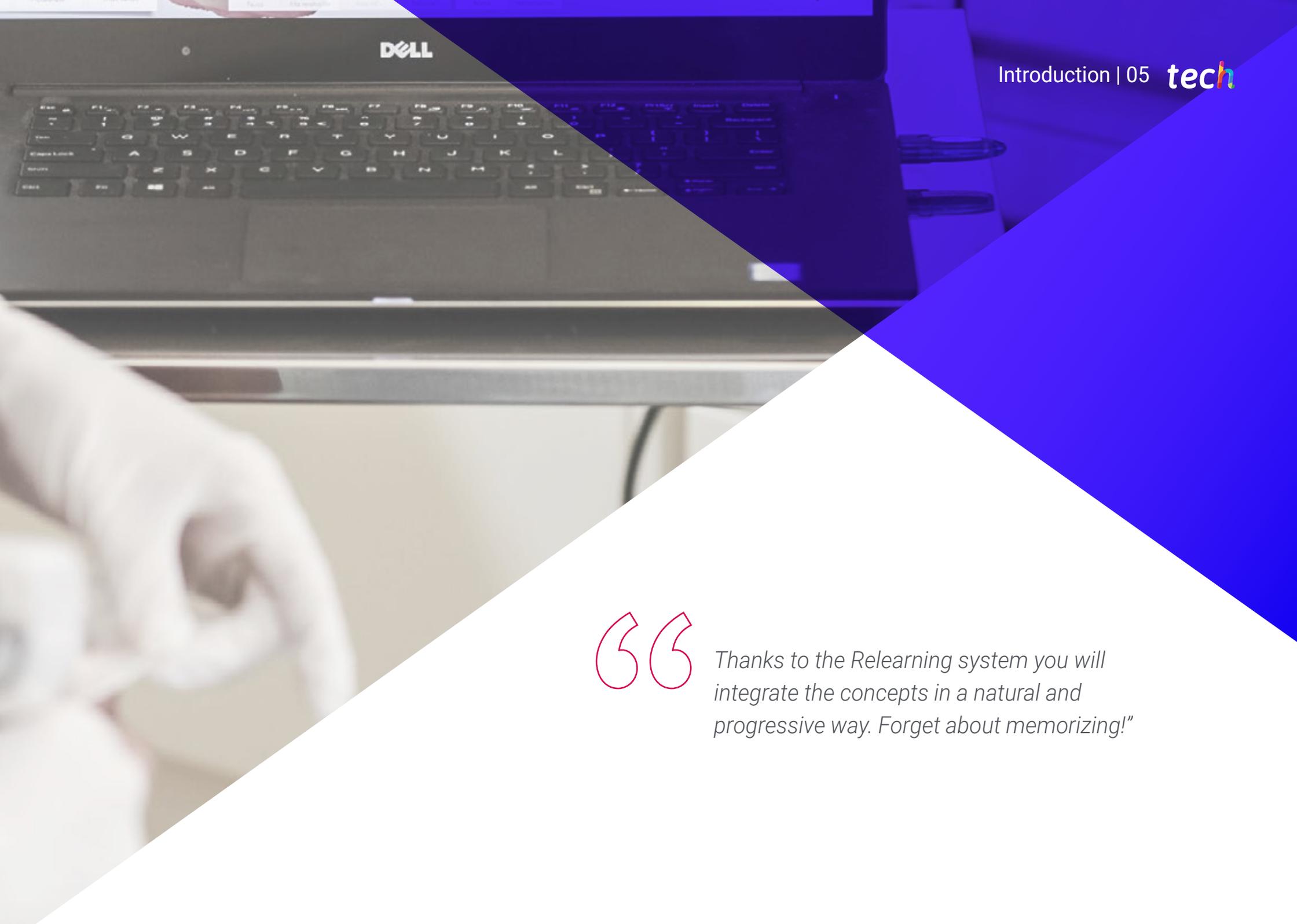
*p. 28*

# 01

# Introduction

The field of dentistry has been enriched by the rise of healthcare technology. One example of this is 3D modeling, which has completely revolutionized this sector. Thanks to the use of Artificial Intelligence (AI), practitioners obtain detailed information about the anatomy and dental structures of patients. In this way, specialists make more informed decisions that contribute to more effective treatment planning. However, practitioners need to delve deeper into several important aspects when using these systems in their clinical practice. Only then will they be able to ensure proper and safe use in dental care. For this reason, TECH implements a 100% online program that will optimize orthodontic treatments through AI.





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*Thanks to the Relearning system you will integrate the concepts in a natural and progressive way. Forget about memorizing!”*

Intelligent Automation is an essential mechanism in the prevention of oral diseases. In this regard, the imaging analysis it performs allows for the detection of early signs of dental conditions such as oral cancer. Dentists take advantage of the assessment of patients' individual risks to design personalized preventive treatments, which may include a series of recommendations for oral care at home through regular cleanings or sealant applications. In addition, this can serve to improve prognoses and achieve the expected results.

Aware of this reality, TECH is developing a comprehensive study that will enable students to diagnose oral conditions using AI. Under the support of an illustrious teaching team, the syllabus will address how to interpret dental images effectively to detect early conditions such as dental caries. In turn, the didactic contents will offer innovative formulas with which experts will prevent risks during therapies. The university program will also provide instructions on how to get the most out of monitoring equipment with intelligent technologies. Moreover, the program will include real case studies, which will help professionals to learn valuable lessons.

This academic itinerary is distinguished by its 100% online methodology. This modality will provide physicians with the necessary flexibility to adapt to their professional schedules. Likewise, the *Relearning* methodology, based on the repetition of key concepts, will be implemented to fix knowledge and facilitate effective learning. In this way, the combination of accessibility and the innovative pedagogical approach will ensure that professionals acquire practical skills, preparing them to overcome specific challenges during dental treatments. All learners will need is a device with Internet access (such as a cell phone, computer or *tablet*) to immerse themselves in an educational experience that will allow them to take a quality leap in their professional career.

This **Postgraduate Certificate in Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry** contains the most complete and up-to-date program on the market. Its most notable features are:

- ♦ The development of case studies presented by experts in Artificial Intelligence in Dentistry
- ♦ 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



*You will learn in depth the benefits of Machine Learning to detect Mouth Ulcers and oral mucosal lesions"*

“

*You will develop multiple competencies that will elevate your professional horizons, including image interpretation”*

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.

*You will handle Artificial Intelligence effectively to prevent oral pathologies that may put people's condition at risk.*

*You will acquire knowledge without geographical limitations or preestablished timing” Specialize from anywhere in the world!*



# 02

## Objectives

This university program will turn students into true specialists in Intelligent Automation applied to dental contexts. Graduates will optimize orthodontic therapeutic procedures and offer citizens personalized plans according to their individual circumstances. Students will also be highly qualified to make reliable diagnoses of oral conditions, thanks to the correct interpretation of dental images. In this way, they will include in their daily procedures the latest technological trends in the healthcare field, such as dental robotics or 3D modeling.



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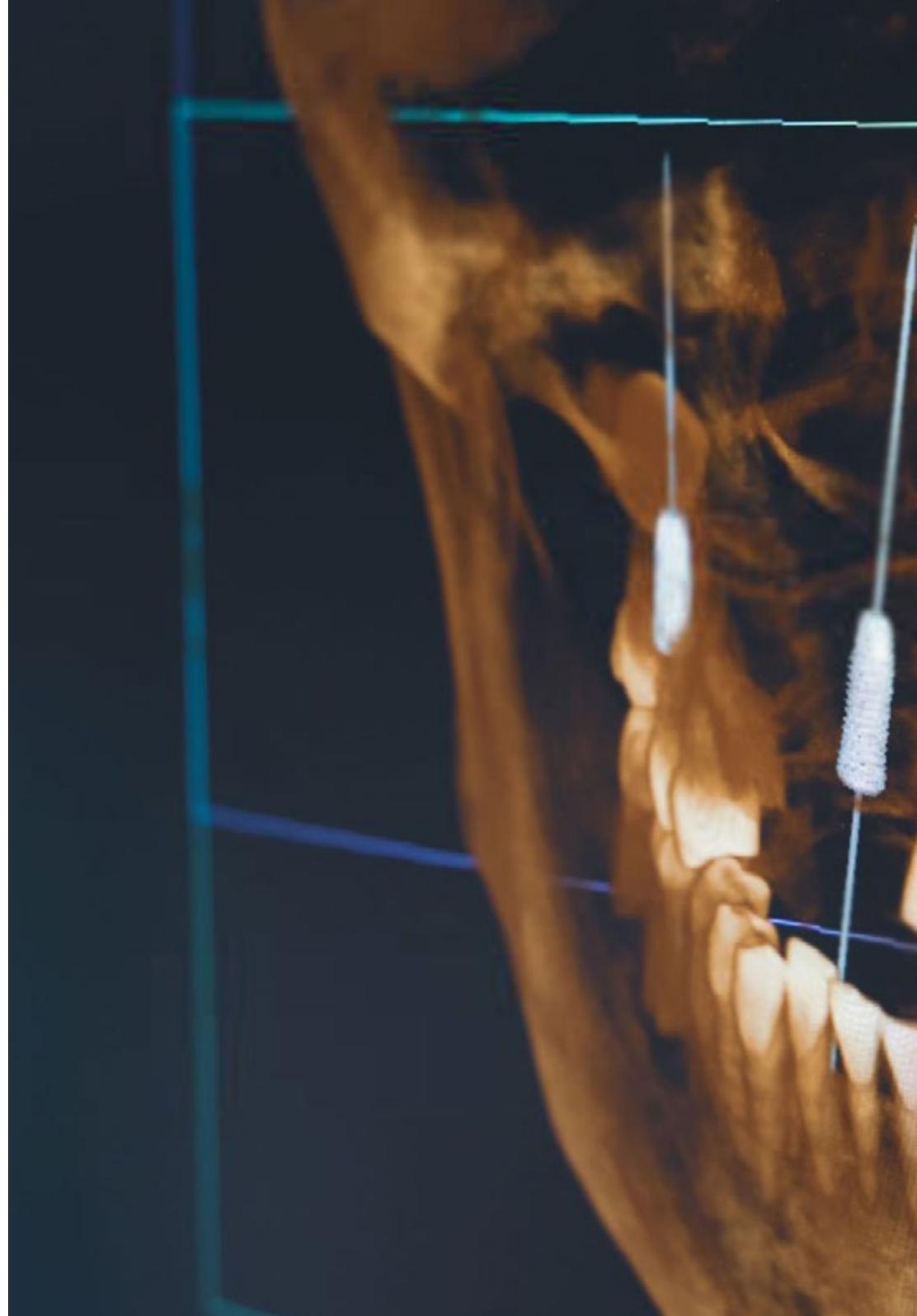
*Increase your confidence in decision making by updating your knowledge through innovative audiovisual resources. Sign up now!”*



## General Objectives

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- ♦ 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
- ♦ Explore 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
- ♦ Gain a solid understanding of Machine Learning principles and their specific application in dental contexts
- ♦ Analyze dental data, including visualization techniques to improve diagnostics
- ♦ Acquire advanced skills in the application of AI for the accurate diagnosis of oral diseases and interpretation of dental images
- ♦ Understand the ethical and privacy considerations associated with the application of AI in dentistry
- ♦ Explore ethical challenges, regulations, professional liability, social impact, access to dental care, sustainability, policy development, innovation, and future prospects in the application of AI in dentistry





## Specific Objectives

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- Acquire expertise in the use of AI for treatment planning, including 3D modeling, orthodontic treatment optimization and treatment plan customization
- Develop advanced skills in the application of AI for the accurate diagnosis of oral diseases, including interpretation of dental images and pathology detection
- Obtain competencies to use AI tools in oral health monitoring and oral disease prevention, effectively integrating these technologies into dental practice
- Collect, manage and use both clinical and radiographic data in AI treatment planning
- Enable students to evaluate and select AI technologies suitable for their dental practice, considering aspects such as accuracy, reliability and scalability



*An academic institution that adapts to your needs and designs a program for you to reconcile your daily activities with a quality qualification"*

# 03

# Course Management

TECH's fundamental premise is to offer students the most complete education. For this reason, TECH has carefully chosen the teaching staff that is part of this Postgraduate Certificate in Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry. These professionals have an extensive professional background, after working in renowned health institutions and years of research. Thanks to the knowledge they pour into the didactic materials, students will be able to broaden their understanding while developing new competencies to apply in their medical practice.



“

*The leading experts in Artificial Intelligence in Dentistry have come together to provide you with all their knowledge on this subject”*

## Management



### **Dr. Peralta Martín-Palomino, Arturo**

- ♦ CEO and CTO at Prometheus 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
- ♦ Professional Master's Degree in Executive MBA by the Isabel I University
- ♦ Professional Master's Degree in Sales and Marketing Management, Isabel I University
- ♦ Expert Master's Degree in Big Data by Hadoop Training
- ♦ Professional Master's Degree in Advanced Information Technologies from the University of Castilla - La Mancha
- ♦ Member of: SMILE Research Group



### Dr. Martín-Palomino Sahagún, Patricia

- ♦ Specialist in Dentistry and Orthodontics
- ♦ Private Orthodontist
- ♦ Researcher
- ♦ Ph.D. in Dentistry from the University Alfonso X El Sabio
- ♦ Postgraduate in Orthodontics from the University Alfonso X El Sabio
- ♦ Degree in Dentistry at the University of Alfonso X El Sabio

## Professors

### Dr. Carrasco González, Ramón Alberto

- ♦ Specialist in Computer Science and Artificial Intelligence
- ♦ Researcher
- ♦ Head of *Business Intelligence* (Marketing) at Caja General de Ahorros de Granada and 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 from the University of Granada
- ♦ Computer Engineer from the University of Granada

### Mr. Popescu Radu, Daniel Vasile

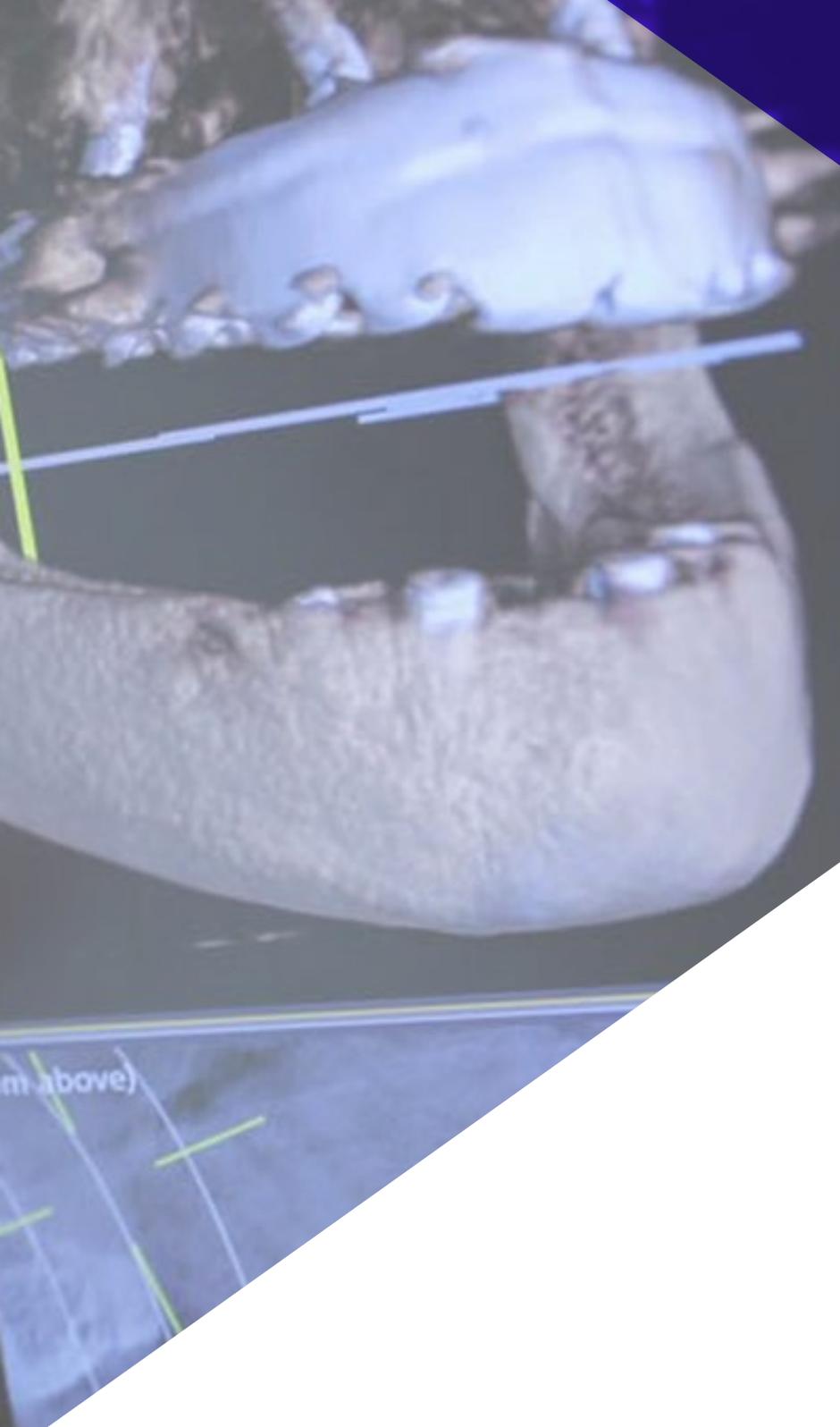
- ♦ Pharmacology, Nutrition and Diet Specialist
- ♦ Freelance Producer of Didactic and Scientific Contents
- ♦ Nutritionist and Community Dietitian
- ♦ Community Pharmacist
- ♦ Researcher
- ♦ Professional Master's Degree in Nutrition and Health at the Oberta University of Catalonia (UOC)
- ♦ Professional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

# 04

## Structure and Content

Through this Postgraduate Certificate, students will nurture their healthcare by implementing AI tools for the diagnosis of oral diseases. To ensure this, the syllabus will focus on the analysis of dental images to appreciate subtleties that might go unnoticed by the human eye. At the same time, the syllabus will delve into 3D modeling for personalized treatment planning. In this way, graduates will provide medical assistance that will be distinguished by its quality. In addition, the didactic materials will provide students with useful guidelines to predict risks such as medication dosage errors.





“

*You will acquire advanced skills that will enable you to make the most precise and accurate diagnoses using Artificial Intelligence”*

## Module 1. AI-assisted Dental Diagnostics and Treatment Planning

- 1.1. AI in Oral Disease Diagnosis
  - 1.1.1. Use of Machine Learning Algorithms to Identify Oral Diseases
  - 1.1.2. Integration of AI in Diagnostic Equipment for Real-Time Analysis
  - 1.1.3. AI-assisted Diagnostic Systems to Improve Accuracy
  - 1.1.4. Analysis of Symptoms and Clinical Signals through AI for Rapid Diagnostics
- 1.2. Dental Image Analysis with AI
  - 1.2.1. Development of Software for the Automatic Interpretation of Dental Radiographs
  - 1.2.2. AI in the Detection of Abnormalities in Oral MRI Images
  - 1.2.3. Improvement in the Quality of Dental Imaging through AI Technologies
  - 1.2.4. Deep Learning Algorithms for Classifying Dental Conditions in Imaging
- 1.3. AI in Caries and Dental Pathology Detection
  - 1.3.1. Pattern Recognition Systems for Identifying Early Cavities
  - 1.3.2. AI for Risk Assessment of Dental Pathologies
  - 1.3.3. Computer Vision Technologies in the Detection of Periodontal Diseases
  - 1.3.4. AI Tools for Caries Monitoring and Progression
- 1.4. 3D Modeling and Treatment Planning with AI
  - 1.4.1. Using AI to Create Accurate 3D Models of the Oral Cavity
  - 1.4.2. AI Systems in the Planning of Complex Dental Surgeries
  - 1.4.3. Simulation Tools for Predicting Treatment Outcomes
  - 1.4.4. AI in the Customization of Prosthetics and Dental Appliances
- 1.5. Optimization of Orthodontic Treatments using AI
  - 1.5.1. AI in the Planning and Follow-up of Orthodontic Treatments
  - 1.5.2. Algorithms for the Prediction of Tooth Movements and Orthodontic Adjustments
  - 1.5.3. AI Analysis to Reduce Orthodontic Treatment Time
  - 1.5.4. Real-time Remote Monitoring and Treatment Adjustment Systems
- 1.6. Risk Prediction in Dental Treatments
  - 1.6.1. AI Tools for Risk Assessment in Dental Procedures
  - 1.6.2. Decision Support Systems for Identifying Potential Complications
  - 1.6.3. Predictive Models for Anticipating Treatment Reactions





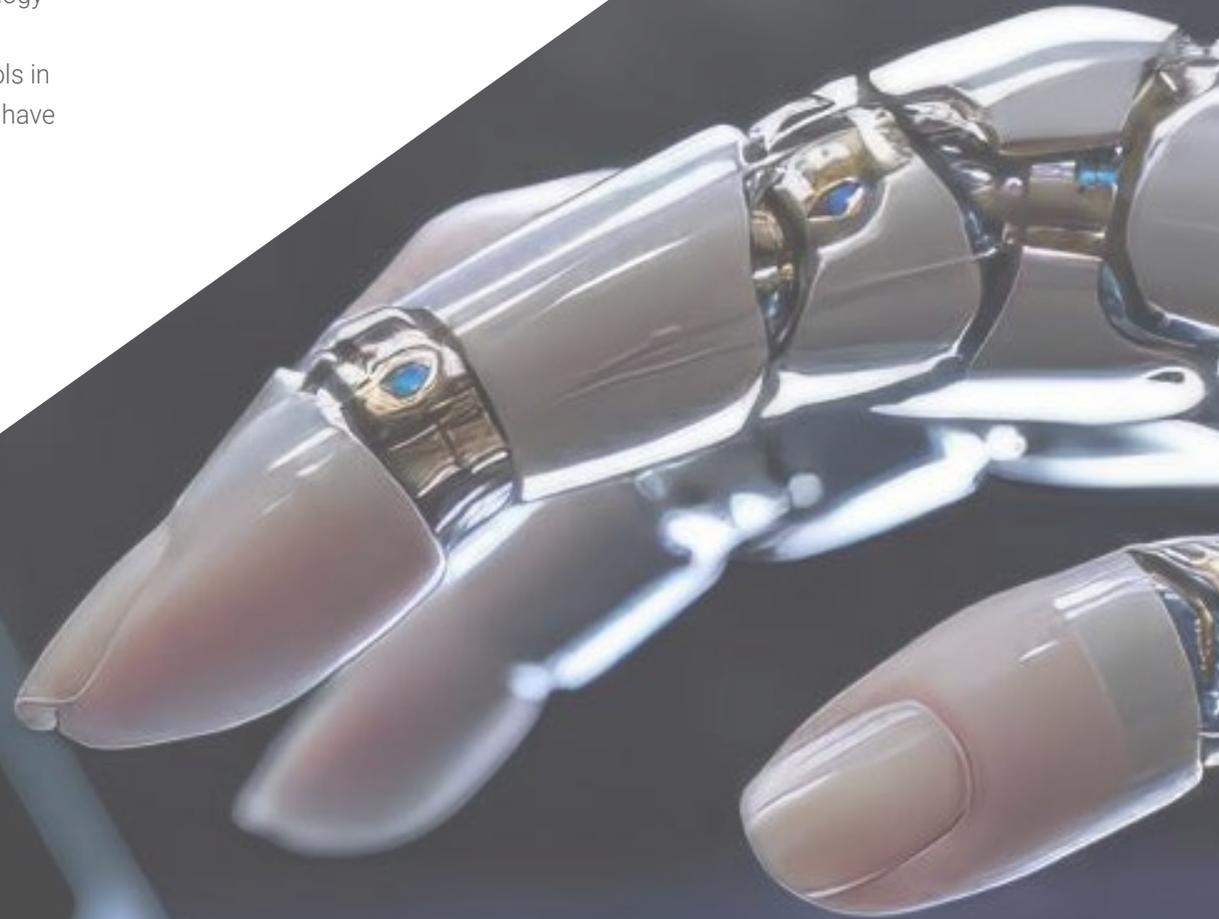
- 1.6.4. Analysis of Clinical Histories using AI to Personalize Treatments
- 1.7. Personalization of Treatment Plans with AI
  - 1.7.1. AI in the Adaptation of Dental Treatments to Individual Needs
  - 1.7.2. AI-based Treatment Recommender Systems
  - 1.7.3. Analysis of Oral Health Data for Personalized Treatment Planning
  - 1.7.4. AI Tools for Adjusting Treatments Based on Patient Response
- 1.8. Oral Health Monitoring with Intelligent Technologies
  - 1.8.1. Smart Devices for Oral Hygiene Monitoring
  - 1.8.2. AI-enabled Mobile Applications for Dental Health Monitoring
  - 1.8.3. Wearables with Sensors to Detect Changes in Oral Health
  - 1.8.4. AI-based Early Warning Systems to Prevent Oral Diseases
- 1.9. AI in Oral Disease Prevention
  - 1.9.1. AI Algorithms to Identify Risk Factors for Oral Diseases
  - 1.9.2. Oral Health Education and Awareness Systems with AI
  - 1.9.3. Predictive Tools for the Early Prevention of Dental Problems
  - 1.9.4. AI in the Promotion of Healthy Habits for Oral Prevention
- 1.10. Case Studies: Diagnostic and Planning Successes with AI
  - 1.10.1. Analysis of Real Cases where AI Improved Dental Diagnosis
  - 1.10.2. Successful Case Studies on the Implementation of AI for Treatment Planning
  - 1.10.3. Treatment Comparisons with and without the Use of AI
  - 1.10.4. Documentation of Improvements in Clinical Efficiency and Effectiveness with AI

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.



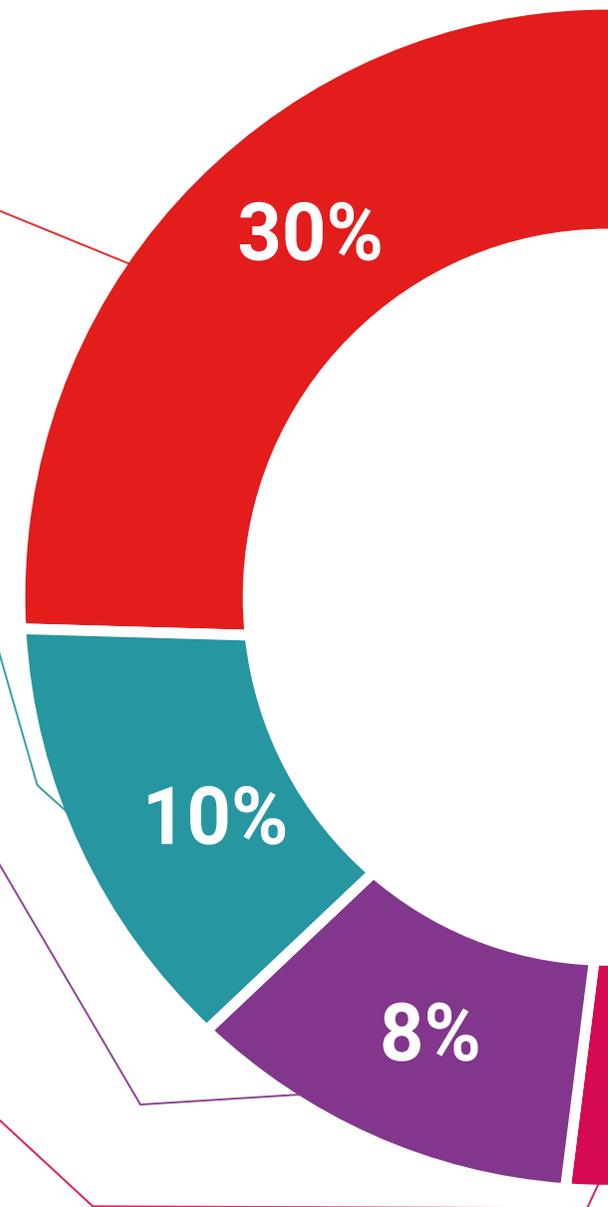
### Practising Skills and Abilities

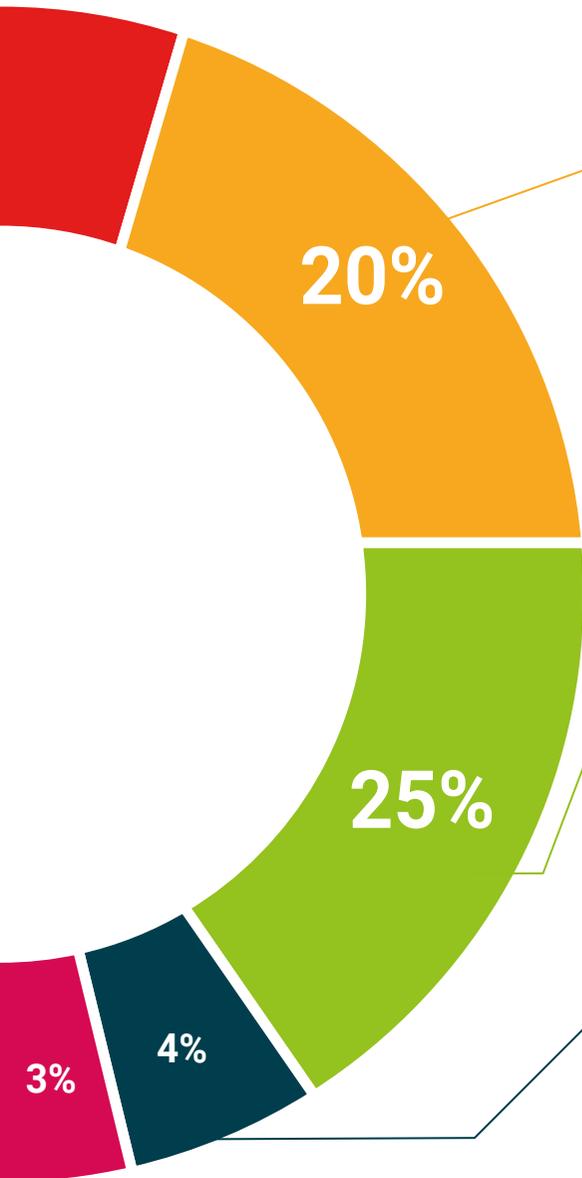
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This program will allow you to obtain your **Postgraduate Certificate in Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

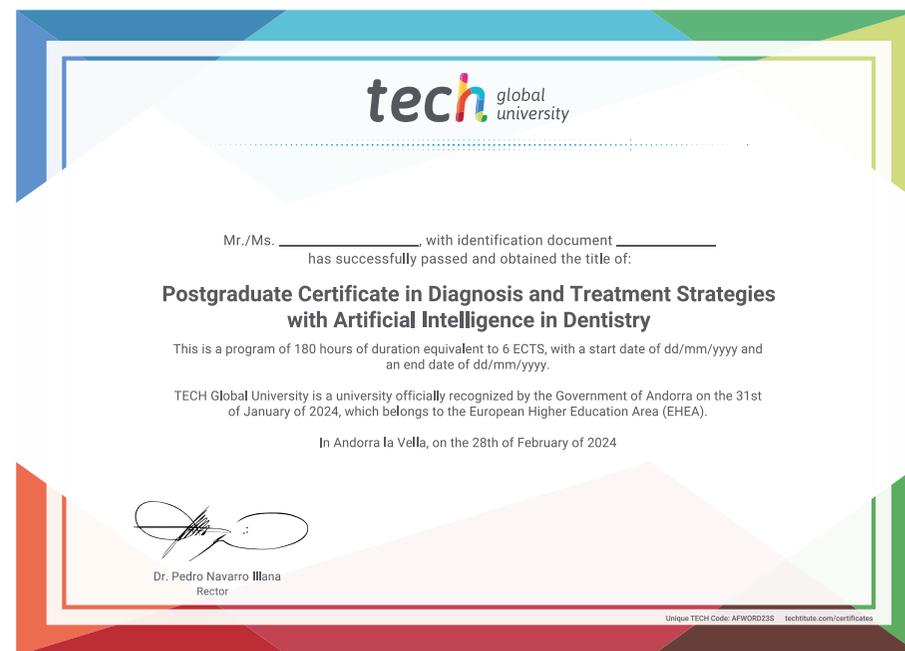
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



future

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guarantee accreditation teaching

institutions technology learning

community commitment

**tech** global  
university

personalized service innovation

knowledge present

online treatment

development languages

virtual classroom

## Postgraduate Certificate

Diagnosis and Treatment  
Strategies with Artificial  
Intelligence in Dentistry

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Certificate Diagnosis and Treatment Strategies with Artificial Intelligence in Dentistry