Postgraduate Diploma

Diagnosis, Treatment and Dental Control with Artificial Intelligence

tech global university

![tech global university logo]

Postgraduate Diploma
Diagnosis, Treatment and Dental Control with Artificial Intelligence

- » Modality: **online**
- » Duration: **6 monthst**
- » Certificate: **TECH Global University**
- » Credits: **18 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/artificial-intelligence/postgraduate-diploma/postgraduate-diploma-diagnosis-treatment-denta-control-artificial-intelligence**

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01
Introduction

Artificial Intelligence (AI) assisted diagnosis in dentistry has advanced significantly thanks to the development of technological tools. For example, the creation of *datasets* in the field of health helps to detect early oral problems, ranging from tooth decay, periodontal diseases and even oral cancers. In this way, health professionals take advantage of this resource to personalize dental treatment and care according to the individual needs of patients. To do so, experts take into account factors based on demographic data, medical histories and specific characteristics of individuals. Given this important application, TECH is developing a 100% online program for clinicians to optimize diagnoses in their clinical practices through Intelligent Automation.

You will apply advanced medical data retrieval methods at the world's best digital university, according to Forbes"

Data Mining and Machine Learning are fundamentally aimed at improving user care by facilitating clinical decision making in the dental setting. In this regard, the technologies are particularly useful for early diagnoses, personalization of therapeutic treatments and efficient resource management. Medical staff improve the healthcare experience of people during their passage through dental offices.

In this context, TECH has implemented an advanced program that will delve into the analysis of Big Data in the health sector, through the systems offered by Artificial Intelligence. Designed by specialists in this field, the syllabus will delve, both in data processing, as well as in quality assessment during the various analyses. At the same time, it will offer the keys for professionals to guarantee security during the handling of information.

Likewise, the didactic materials will emphasize the importance of pattern recognition and Machine Learning during clinical diagnoses. In addition, the most advanced tools for monitoring and control of health indicators will be analyzed. This will allow students to implement Machine Learning algorithms for the execution of therapeutic plans, with which to provide health care based on excellence.

The methodology of this program reinforces its innovative character. TECH provides students with a 100% online educational environment, adapting to the needs of busy professionals who want to advance their careers. It also employs the Relearning methodology, based on the repetition of key concepts to fix knowledge and facilitate learning. In this way, the combination of flexibility and a robust pedagogical approach makes it highly accessible.

This **Postgraduate Diploma in Diagnosis, Treatment and Dental Control with Artificial Intelligence** contains the most complete and up-to-date program on the market. The most important features include:

- Development of practical cases presented by experts in Diagnosis, Treatment and Dental Control with Artificial Intelligence
- 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
- 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 delve into pattern recognition and Machine Learning to make the most accurate clinical diagnoses"

" *You will optimize your healthcare thanks to approaches characterized by their high interdisciplinary collaboration between different professionals"*

Do you want to delve into the governance of private data in the health sector? Achieve it through this syllabus in only 450 hours.

Thanks to the Relearning system used by TECH, you will reduce the long hours of study and memorization.

The program's teaching staff includes professionals from the field who contribute their work experience to this educational 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

Thanks to this university program, graduates will acquire skills to handle the most advanced tools of Artificial Intelligence in the clinical context. In this way, they will be able to perform assisted diagnoses, analysis of medical images and interpretation of results using Intelligent Automation. Likewise, professionals will master the main mechanisms of Big Data, effectively implementing Data Mining and Predictive Analytics techniques. In addition, they will acquire specialized knowledge in the application of Artificial Intelligence, in aspects such as dental epidemiology, clinical data management, social network analysis and clinical research using modern algorithms.

You will develop Artificial Intelligence algorithms to optimize the monitoring of your patients' medical condition"

General Objectives

- Gain a solid understanding of *Machine Learning* principles and their specific application in dental contexts

- Master methods and tools for analyzing dental data, including visualization techniques to improve diagnostics

- Develop a thorough understanding of the ethical and privacy considerations associated with the application of AI in dentistry

- Acquire advanced skills in the application of AI for the accurate diagnosis of oral diseases and interpretation of dental images

- Understand the specialized use of AI in 3D treatment planning and modeling, optimizing orthodontic treatments and customizing treatment plans

- Develop competencies to use AI tools in oral health monitoring, oral disease prevention and effective integration of these technologies

- Know the latest AI technologies applied in 3D printing, robotics, clinical management, teleodontology, and automation of administrative tasks

- Use AI to analyze patient feedback, improve marketing strategies and dental CRM, optimizing clinical and administrative management in dental clinics

- Handle large datasets, using *Big Data* concepts, data mining, predictive analytics and machine learning algorithms

- 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

Module 1. Diagnosis in Clinical Practice using AI

- Critically analyze the benefits and limitations of AI in healthcare
- Identify potential pitfalls, providing an informed assessment of its application in clinical settings
- Recognize the importance of collaboration across disciplines to develop effective AI solutions
- Develop competencies to apply AI tools in the clinical context, focusing on aspects such as assisted diagnosis, analysis of medical images and interpretation of results
- Identify possible errors in the application of AI in healthcare, providing an informed view of its use in clinical settings

Module 2. Treatment and Management of Patients with AI

- Interpret results for ethical *datasets* creation and strategic application in health emergencies
- Acquire advanced skills in the presentation, visualization, and management of AI data in healthcare
- Gain a comprehensive perspective of emerging trends and technological innovations in AI applied to healthcare
- Develop AI algorithms for specific applications such as health monitoring, facilitating the effective implementation of solutions in medical practice
- Design and implement individualized medical treatments by analyzing patients' clinical and genomic data with AI

Module 3. Analysis of *Big Data* in the health sector with AI

- Acquire a solid understanding of medical data collection, filtering, and preprocessing
- Develop a clinical approach based on data quality and integrity in the context of privacy regulations
- Apply the acquired knowledge in use cases and practical applications, enabling to understand and solve industry-specific challenges, from text analytics to data visualization and medical information security
- Define Big Data techniques specific to the healthcare sector, including the application of machine learning algorithms for analytics
- Employ Big Data procedures to track and monitor the spread of infectious diseases in real time for effective response to epidemics

A university program that will give you flexibility thanks to its 100% online format. TECH adapts to the schedules of busy professionals!"

03

Course Management

To maintain intact the excellent educational level of TECH programs, this Postgraduate Diploma is directed and taught by leading professionals in the field of Artificial Intelligence in Dentistry. These experts have an extensive professional background, which has allowed them to provide innovative solutions in dental clinics of national prestige. In this way, the specialists have developed the didactic contents available in this program, so that the knowledge and skills that students will acquire will be applicable in their work experience.

You will have access to a syllabus designed by a reputable teaching staff, which will guarantee you a successful learning"

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
- 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

Structure and Content

This Postgraduate Diploma is focused on the integral application of Artificial Intelligence in Dentistry, especially in diagnosis and treatment planning. The syllabus will address the usefulness of this resource to address dental pathologies, among which Caries stands out. Likewise, the syllabus will provide the most advanced tools to optimize therapies, using 3D models. Similarly, the impact of Big Data on dental practice will be studied in depth, emphasizing Data Mining and other innovative techniques, with which specialists will extract valuable information about dental records.

"

This university program merges clinical excellence with the technological revolution of Artificial Intelligence. Stay ahead of the curve in the field of Dentistry!"

Module 1. Monitoring and Control of Dental Health using AI

1.1. AI Applications for Patient's Dental Health Management
  1.1.1. Design of Mobile Applications for Dental Hygiene Monitoring
  1.1.2. AI Systems for the Early Detection of Caries and Periodontal Diseases
  1.1.3. Use of AI in the Personalization of Dental Treatments
  1.1.4. Image Recognition Technologies for Automated Dental Diagnostics

1.2. Integration of Clinical and Biomedical Information as a Basis for Dental Health Monitoring
  1.2.1. Platforms for Integration of Clinical and Radiographic Data
  1.2.2. Analysis of Medical Records to Identify Dental Risks
  1.2.3. Systems for Correlating Biomedical Data with Dental Conditions
  1.2.4. Tools for the Unified Management of Patient Information

1.3. Definition of Indicators for the Control of the Patient's Dental Health
  1.3.1. Establishment of Parameters for the Evaluation of Oral Health
  1.3.2. Systems for Monitoring Progress in Dental Treatments
  1.3.3. Development of Risk Indexes for Dental Disease
  1.3.4. AI Methods for the Prediction of Future Dental Problems

1.4. Natural Language Processing of Dental Health Records for Indicator Extraction
  1.4.1. Automatic Extraction of Relevant Data from Dental Records
  1.4.2. Analysis of Clinical Notes to Identify Dental Health Trends
  1.4.3. Use of NLP to Summarize Long Medical Records
  1.4.4. Early Warning Systems Based on Clinical Text Analysis

1.5. AI Tools for the Monitoring and Control of Dental Health Indicators
  1.5.1. Development of Applications for Monitoring Oral Hygiene and Oral Health
  1.5.2. AI-based Personalized Patient Alerts Systems
  1.5.3. Analytical Tools for Continuous Assessment of Dental Health
  1.5.4. Use of Wearables and Sensors for Real-Time Dental Monitoring

1.6. Development of Dashboards for the Monitoring of Dental Indicators
  1.6.1. Creation of Intuitive Interfaces for Dental Health Monitoring
  1.6.2. Integration of Data from Different Clinical Sources into a Single Dashboard
  1.6.3. Data Visualization Tools for Treatment Monitoring
  1.6.4. Customization of Dashboards According to the Needs of the Dental Professional

1.7.   Interpretation of Dental Health Indicators and Decision Making

    1.7.1.   Data-driven Clinical Decision Support Systems

    1.7.2.   Predictive Analytics for Dental Treatment Planning

    1.7.3.   AI for Interpretation of Complex Oral Health Indicators

    1.7.4.   Tools for the Evaluation of Treatment Effectiveness

1.8.   Generation of Dental Health Reports using AI Tools

    1.8.1.   Automation of the Creation of Detailed Dental Reports

    1.8.2.   Customized Report Generation Systems for Patients

    1.8.3.   AI Tools for Summarizing Clinical Findings

    1.8.4.   Integration of Clinical and Radiological Data into Automated Reports

1.9.   AI-enabled Platforms for Patient Monitoring of Dental Health

    1.9.1.   Applications for Oral Health Self-monitoring

    1.9.2.   AI-based Interactive Dental Education Platforms

    1.9.3.   Tools for Symptom Tracking and Personalized Dental Advice

    1.9.4.   Gamification Systems to Encourage Good Dental Hygiene Habits

1.10.   Security and Privacy in the Treatment of Dental Information

    1.10.1.   Security Protocols for the Protection of Patient Data

    1.10.2.   Encryption and Anonymization Systems in the Management of Clinical Data

    1.10.3.   Regulations and Legal Compliance in the Management of Dental Information

    1.10.4.   Privacy Education and Awareness for Professionals and Patients

Module 2. AI-assisted Dental Diagnostics and Treatment Planning

2.1.   AI in Oral Disease Diagnosis

    2.1.1.   Use of Machine Learning Algorithms to Identify Oral Diseases

    2.1.2.   Integration of AI in Diagnostic Equipment for Real-Time Analysis

    2.1.3.   AI-assisted Diagnostic Systems to Improve Accuracy

    2.1.4.   Analysis of Symptoms and Clinical Signals through AI for Rapid Diagnostics

2.2.   Dental Image Analysis with AI

    2.2.1.   Development of Software for the Automatic Interpretation of Dental Radiographs

    2.2.2.   AI in the Detection of Abnormalities in Oral MRI Images

    2.2.3.   Improvement in the Quality of Dental Imaging through AI Technologies

    2.2.4.   Deep Learning Algorithms for Classifying Dental Conditions in Imaging

2.3.   AI in Caries and Dental Pathology Detection

    2.3.1.   Pattern Recognition Systems for Identifying Early Cavities

    2.3.2.   AI for Risk Assessment of Dental Pathologies

    2.3.3.   Computer Vision Technologies in the Detection of Periodontal Diseases

    2.3.4.   AI Tools for Caries Monitoring and Progression

2.4.   3D Modeling and Treatment Planning with AI

    2.4.1.   Using AI to Create Accurate 3D Models of the Oral Cavity

    2.4.2.   AI Systems in the Planning of Complex Dental Surgeries

    2.4.3.   Simulation Tools for Predicting Treatment Outcomes

    2.4.4.   AI in the Customization of Prosthetics and Dental Appliances

2.5.   Optimization of Orthodontic Treatments using AI

    2.5.1.   AI in the Planning and Follow-up of Orthodontic Treatments

    2.5.2.   Algorithms for the Prediction of Tooth Movements and Orthodontic Adjustments

    2.5.3.   AI Analysis to Reduce Orthodontic Treatment Time

    2.5.4.   Real-time Remote Monitoring and Treatment Adjustment Systems

2.6.   Risk Prediction in Dental Treatments

    2.6.1.   AI Tools for Risk Assessment in Dental Procedures

    2.6.2.   Decision Support Systems for Identifying Potential Complications

    2.6.3.   Predictive Models for Anticipating Treatment Reactions

    2.6.4.   Analysis of Clinical Histories using AI to Personalize Treatments

2.7.   Personalization of Treatment Plans with AI

    2.7.1.   AI in the Adaptation of Dental Treatments to Individual Needs

    2.7.2.   AI-based Treatment Recommender Systems

    2.7.3.   Analysis of Oral Health Data for Personalized Treatment Planning

    2.7.4.   AI Tools for Adjusting Treatments Based on Patient Response

2.8.   Oral Health Monitoring with Intelligent Technologies

    2.8.1.   Smart Devices for Oral Hygiene Monitoring

    2.8.2.   AI-enabled Mobile Applications for Dental Health Monitoring

    2.8.3.   Wearables with Sensors to Detect Changes in Oral Health

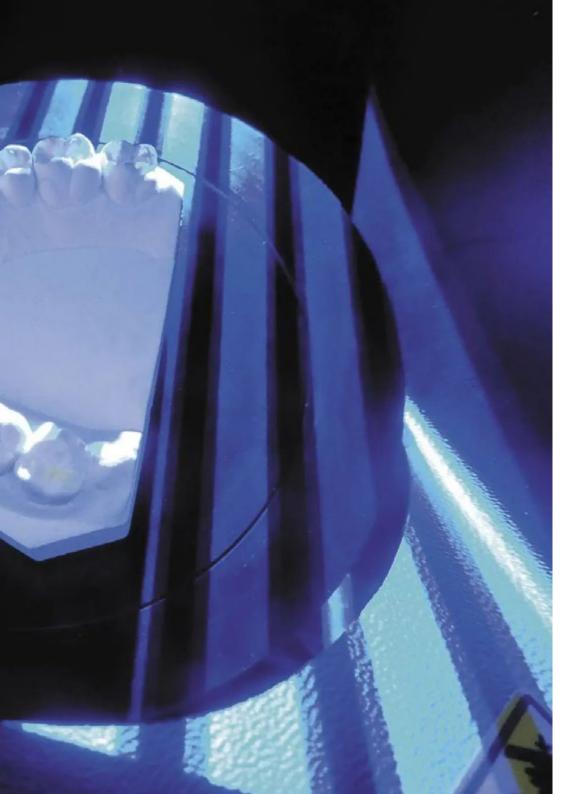   2.8.4.   AI-based Early Warning Systems to Prevent Oral Diseases

Module 3. Advanced Analytics and Data Processing in Dentistry

A unique Postgraduate Diploma that will help you, in only 6 months, to take a leap in your profession"

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*"
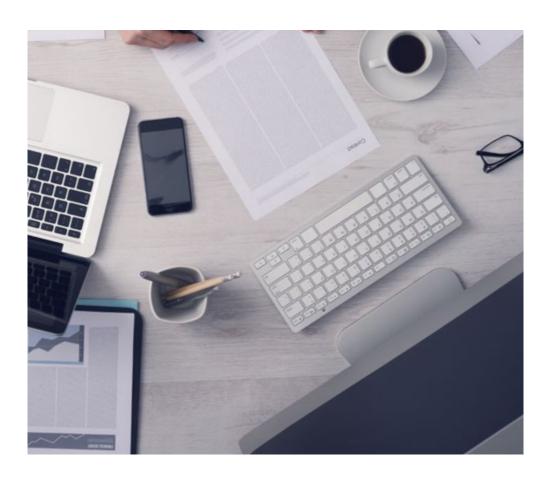
Case Study to contextualize all content

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.
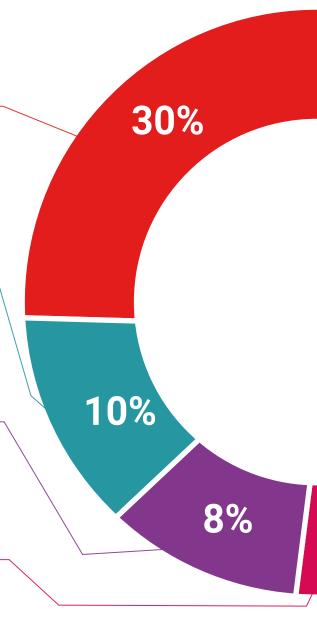
Practising Skills and Abilities

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.

30%

10%

8%

20%

25%

4%

3%

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.
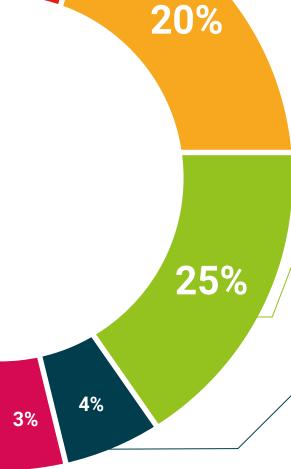
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

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.

Certificate

The Postgraduate Diploma in Diagnosis, Treatment and Dental Control with Artificial Intelligence guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

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 Diploma in Diagnosis, Treatment and Dental Control with Artificial Intelligence** 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 Diploma in Diagnosis, Treatment and Dental Control with Artificial Intelligence**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**

tech global university

Mr./Ms. _____, with identification document _____ has successfully passed and obtained the title of:

Postgraduate Diploma in Diagnosis, Treatment and Dental Control with Artificial Intelligence

This is a program of 450 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

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 Global University will make the necessary arrangements to obtain it, at an additional cost.

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