Postgraduate Diploma

MRI, Neuroimaging and Neuropathology in Dementia

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Postgraduate Diploma
MRI, Neuroimaging and Neuropathology in Dementia

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Global University**
- » Accreditation: **24 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-mri-neuroimaging-neuropathology-dementia**

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01
Introduction

Advances in MRI, Neuroimaging and Neuropathology techniques are generating important changes in the approach and treatment of dementia-related conditions. In this field, changes are occurring at considerable speed, which requires the professional to make a considerable effort to stay ahead of the curve.

In this university program we offer you the most intense and specific proram in this area, with a teaching approach that is totally compatible with your personal and professional life.

This program is the best option you can find to update your knowledge in MRI, Neuroimaging and Neuropathology techniques with efficiency and quality"

Patients with forms of dementia gradually lose more and more of their abilities. For this reason, it's necessary to provide them with more personalized and multidisciplinary care, with professionals who are able to adapt to any situation and who have the most up to date knowledge in this field. By integrating the vision of specialists in neurology, geriatrics, psychiatry, neuro-radiology, nuclear medicine and neuropathology we are able to offer exceptional specialization, which is both complete and enriching.

Basic concepts will be taught in a developing educational structure by leading professionals in their fields, in both functional and structural imaging biomarkers as well as in neuropathology, including genetic counseling and neuropsychology. We never miss the opportunity to specialize students to be able to deal with the diagnostic process and the management of people who suffer from rapidly progressive dementia in its different forms. In addition, the student will be presented with real situations within which they need to make clinical and diagnostic decisions which are all the more complex due to their differential diagnosis and their therapeutic approach.

The theoretical contents will be reinforced by clinical-practical cases, educational videos, online tutorials, as well as support material, always based on the latest information in the field.

This Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia is an educational project that promises to specialize high-quality professionals. A program devised by professionals specialized in each specific field who encounter new challenges every day.

After completing this Postgraduate Diploma, the student with have sufficient knowledge to approach the management of people with dementia. From the first moment, they will know everything that comes with this type of disease, from its diagnosis, treatment and possible adverse effects to the importance of communication with the family members. So don't hesitate any longer and become a true professional through the latest 100% online educational technology.

This **Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

* Practical case studies presented by experts in dementia
* 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
* The latest information on treatment for dementia patients
* Practical exercises where the self-assessment process can be carried out to improve learning
* Special emphasis on innovative methodologies in the field of dementia
* 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

Don't miss the opportunity to study this Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia with us. It's the perfect opportunity to advance your career"

" *With this Postgraduate Diploma, you will be able to update your knowledge and obtain a qualification endorsed by TECH Global University"*

The audiovisual content of this Postgraduate Diploma will allow you to advance quickly, incorporating the content into your clinical practice immediately.

This 100% online Postgraduate Diploma will allow you to benefit from the fastest and easiest way to study on the educational market.

The teaching staff includes professionals from the field of healthcare, who bring their experience to this specialization program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive specialization programmed to prepare in real situations.

This program is designed around Problem-Based Learning, whereby the specialist must try to solve the different professional practice situations that arise during the educational year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned experts in dementia with extensive experience.

02
Objectives

The Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia is oriented to facilitate the performance of medical professionals by providing them with the latest advances and the most innovative treatments in the sector.

A qualitative leap to the highest level in your specialization that you can study wherever and whenever you want"

General Objectives

- Gain in-depth knowledge of dementia, how to diagnose it and how to treat it
- Identify the risk factors and the possibility of prevention
- Enter the very versatile and extremely difficult field of dementia diseases
- Learn how to detect the early symptoms that could be a sign of this disease
- Explore clinical, motor, cognitive, dysautonomia and neuropsychiatric symptoms
- Know the different clinical presentations of the disease, some of which are first seen in a psychiatric consultation or in the form of neuromuscular or movement disorders before being associated with a type of dementia
- Learn the particularities for examining the signs and symptoms, both cognitive and behavioral, as well as understanding the therapeutic approach
- Specialize the students in the knowledge of the different assessment tools and cognitive rehabilitation used in various types of dementia
- Understanding genetically conditioned dementia and their inheritance patterns
- Know the different neuroimaging equipment and radiotracers available to evaluate the specific processes involved in neurodegenerative conditions with dementia
- Provide knowledge on the different imaging techniques used in the evaluation of patients with cognitive impairment, both structural studies with CT or MRI, and functional studies that can be performed with MRI or Perfusion and Diffusion studies, as well as functional MRI studies

- Know the indications and usefulness of each technique in the different causes of dementia
- Delve into the study of Alzheimer's disease, with emphasis on early diagnosis, as well as on imaging markers that allow assessment of progression and possible response to treatment
- Interpret the most important lesions which characterize the different neurodegenerative pathologies
- Know the main categories of rapidly progressive dementia syndromes, the most prevalent diseases in each one of these categories and the diagnostic algorithm to follow
- Learn to consider important aspects when assessing older people with cognitive deterioration or dementia, taking into account both the impact of neurodegeneration as well as the clinical evolution of people suffering from this condition

An intensive program that will allow you to become a specialist in MRI, Neuroimaging and Neuropathology in Dementia in a short period of time and with the greatest flexibility"

Specific Objectives

Module 1. Alzheimer'sDisease

- Obtain sufficient specialization to be able to deal with the diagnostic process of Alzheimer's disease
- Learn how to use diagnostic biomarkers in an appropriate way
- Know the treatment of cognitive and non-cognitive symptoms, as well as the correct communication of the diagnosis and support throughout the course of the disease
- Gain knowledge of genetic assessment

Module 2. Molecular Neuroimaging in Dementia

- Interpret PET and SPECT images in dementia and Alzheimer's disease and the appropriateness of their use
- Incorporate the results in the diagnosis

Module 3. MRI in Dementia

- Know how to create algorithms in mild and advanced dementia
- Use different imaging markers as well as global and hippocampal volumetric techniques
- Know how to evaluate cerebral perfusion
- Understand the semiology of MRI

Module 4. Neuropathology in Dementia

- Know how to optimize the data from a neuropathological report in dementia to help with diagnosis
- Know how to translate the information for the family of the patient

03
Course Management

The program's teaching staff includes leading experts in Dementia who contribute their vast work experience to this program. Additionally, other recognized experts participate in its design and preparation, completing the program in an interdisciplinary manner.

Leading professionals in the field have come together to teach you the latest advances in treating people with dementia"

Management

Dr. Manzano Palomo, María del Sagrario

- Specialist Physician of the Neurology Service in the Cognitive Pathology Unit of the Infanta Leonor University Hospital
- Coordinator of the Behavioral Neurology and Dementia Group of the Spanish Society of Neurology.
- Reviewer of the Journal of Neurology Spanish Society of Neurology
- Associate Professor of Medicine at the Complutense University of Madrid
- Doctorate in Medicine from the University of Alcalá
- Degree in Medicine from the Complutense University of Madrid
- PhD credits in Neurosciences from the Complutense University of Madrid
- Diploma of Advanced Studies from the Complutense University of Madrid
- MIR Program, Specialty of Neurology at the Hospital Clínico San Carlos
- Member of: Neurogeriatrics Group of the Spanish Society of Neurology and Rotating Committee of the Journal Alzheimer's, Reality and Dementia Research
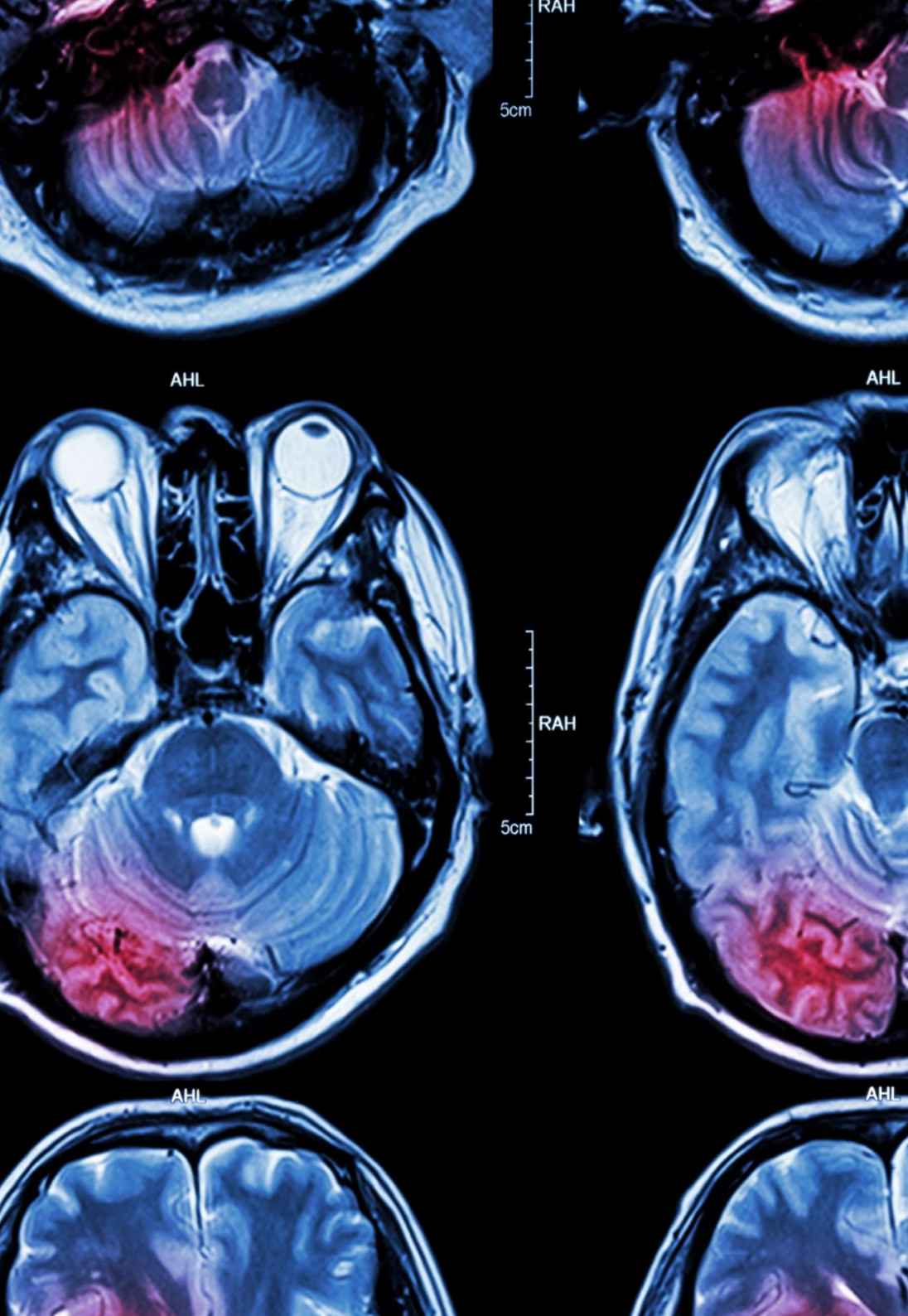
Professors

Dr. Arbizu Lostao, Javier

- Nuclear Medicine Specialist and Expert in Dementia
- Director of the Nuclear Medicine Service of the University Clinic of Navarra
- Head of the PET and SPECT Imaging Area in Neurology, Neuro-oncology and Endocrinology of the Nuclear Medicine Service of the University Clinic of Navarra
- Responsible for the Area of Theragnosis of the Nuclear Medicine Service of the University Clinic of Navarra
- Researcher in Nuclear Medicine
- Author of hundreds of scientific articles published in specialized journals.
- PhD in Medicine and Surgery from the Universidad de Navarra

Dr. Álvarez - Linera Prado, Juan

- Head of the Diagnostic Imaging Service of the Hospital Ruber International
- Collaborator in the Chair of Anatomy at the Autonomous University of Madrid
- Doctor in Neurosciences by the Autonomous University of Madrid
- Graduate of the Magnetic Resonance Imaging in Neuroradiology program at Ohio State University, USA.
- Member of: European Council of Neuroradiology and the Spanish Society of Neuroradiology.

Dr. Rábano Gutiérrez del Arroyo, Alberto

- Pathologist Expert in Neurodegenerative Diseases
- Director of the CIEN Foundation Tissue Bank
- Head of the CIEN Foundation Neuropathology Department
- Head of the Alzheimer Center Project
- President of the Spanish Neuropathology Club
- Member of the Steering Committee of the National Biobanks Network Platform.

04
Structure and Content

The structure of the content has been designed by the best professionals in the sector, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied, and diagnosed, and with extensive knowledge of new technologies applied to teaching.

This Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia contains the most complete and up-to-date scientific program on the market"

Module 1. Alzheimer's Disease

1.1. Concept
1.2. Epidemiology
1.3. Risk Factors
1.4. Typical and Atypical Clinical Phenotypes
1.5. Diagnostic Criteria
1.6. Biomarkers in Alzheimer's Disease
1.7. Treatment Focused on Cognition Pharmacological and Non-pharmacological
1.8. Treatment of BPSD
1.9. Future Therapeutic Targets
1.10. Genetic Assessment

Module 2. Molecular Neuroimaging in Dementia

2.1. Introduction
2.2. Methodological Aspects
    2.2.1. Equipment SPECT and PET
    2.2.2. Molecular Processes and Radiopharmaceuticals
        2.2.2.1. Neuron Activity
        2.2.2.2. Dopaminergic Activity
        2.2.2.3. Amyloid Deposition
        2.2.2.4. Tau Deposit
        2.2.2.5. Neuroinflammation
    2.2.3. Image Analysis
        2.2.3.1. Visual Analysis
        2.2.3.2. Comparison with a Normal Database in Stereostatic Surface Projection (SSP)
        2.2.3.3. Voxel-Based Image Analysis
2.3. Neuroimaging of Alzheimer's Disease
    2.3.1. Mild Cognitive Impairment and Dementia
    2.3.2. Atypical Forms
2.4. Neuroimaging in Fronto-temporal Dementia
    2.4.1. FTD Variant in Behavior
    2.4.2. Primary Aphasias
    2.4.3. Others
2.5. Neuroimaging of Dementia with Parkinsonism
    2.5.1. Lewy Body Dementia
    2.5.2. Progressive Supranuclear Palsy
    2.5.3. Corticobasal Degeneration
2.6. Diagnostic Algorithm
    2.6.1. Diagnostic Algorithm in Alzheimer's Disease
    2.6.2. Diagnostic Algorithm in FTD and Dementia with Parkinsonism
2.7. Case Studies

Module 3. MRI in Dementia

3.1. Introduction
3.2. Diagnostic Algorithm
    3.2.1. CT and MRI in Cognitive Impairment Evaluation Classification of Dementia
    3.2.2. White Matter Evaluation
    3.2.3. Gray Matter Evaluation
    3.2.4. Advanced Techniques: Perfusion, Diffusion, Spectroscopy, Functional MRI
3.3. Potentially Treatable Causes of Dementia
    3.3.1. Adult Hydrocephalus, Vascular Injuries
    3.3.2. Surgical Injuries: Tumors and Subdural Hematoma
    3.3.3. Inflammatory and Infectious Lesions
3.4. Alzheimers Disease.
    3.4.1. Structural MRI: Typical and Atypical Phenotypes
    3.4.2. Volumetry: Cortical Thickness and Hippocampi
    3.4.3. Perfusion Techniques: Differential Diagnosis
    3.4.4. Progression Markers
3.5. Vascular Dementia
    3.5.1. Small Vessel Disease
    3.5.2. Multi-infarct Dementia
    3.5.3. Microhemorrhages SWI Imaging

Module 4. Neuropathology in Dementia

05
Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.

TECH will prepare you to face new challenges in uncertain environments and achieve success in your career"

The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.
The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

" *At TECH you will NOT have live classes (which you might not be able to attend)"*
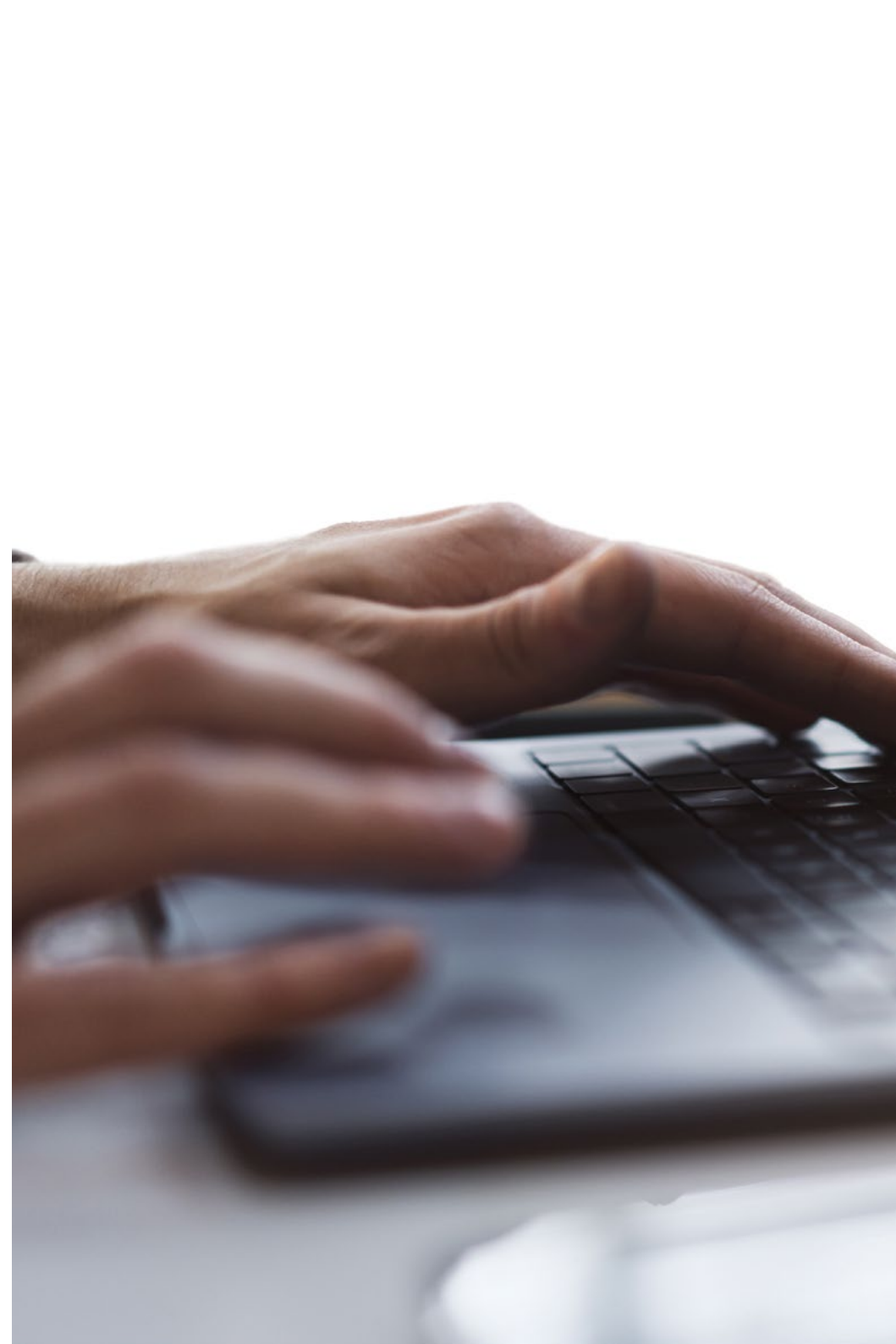
The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

> *TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want"*

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.

Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

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)

A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.

The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.

2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.

3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.

4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.

As such, the best educational materials, thoroughly prepared, will be available in this program:

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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.

Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.

Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.
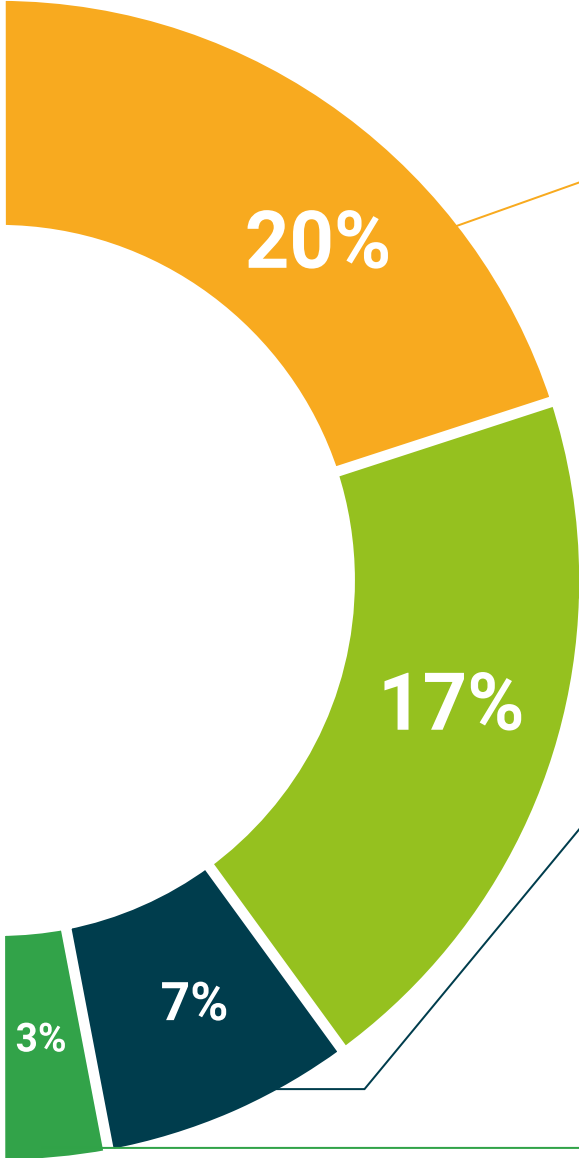
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.

20%

15%

15%

3%

20%

17%

7%

3%

Case Studies

Students will complete a selection of the best case studies in the field.
Cases that are presented, analyzed, and supervised by the best specialists in the world.

Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.

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 for future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.

06
Certificate

The Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the 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 private qualification will allow you to obtain a diploma for the **Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia** 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 private qualification from **TECH Global University**, 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 MRI, Neuroimaging and Neuropathology in Dementia**

Modality: **online**

Duration: **6 months**

Accreditation: **24 ECTS**

tech global university

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

Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia

This is a private qualification of 720 hours of duration equivalent to 24ECTS, 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
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country.   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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Postgraduate Diploma
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Sc 3
SE/M
SI 12

Sc 3
SE/M
SI 14

Sc 3
SE/M
SI 15

Sc 3
SE/M
SI 16

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