Postgraduate Diploma

MRI, Neuroimaging and Neuropathology in Dementias

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Postgraduate Diploma
MRI, Neuroimaging and Neuropathology in Dementias

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

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

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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 Postgraduate Diploma we offer you the most intense and specific course in this field, with a didactic approach totally compatible with your personal and professional life.

This training is the best option you can find to update your skills 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 training, which is complete and enriching.

Basic concepts will be taught in a developing training 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 train 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, training 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 training 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 educational technology 100% online.

This **Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia** contains the most complete and up-to-date scientific program on the market. The most important features of the program include:

- Practical case studies presented by experts in dementia.
- The graphic, schematic, and eminently 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.
- A 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 in MRI, Neuroimaging and Neuropathology in Dementias you will be able to update your knowledge and obtain a degree endorsed by TECH - Technological University"

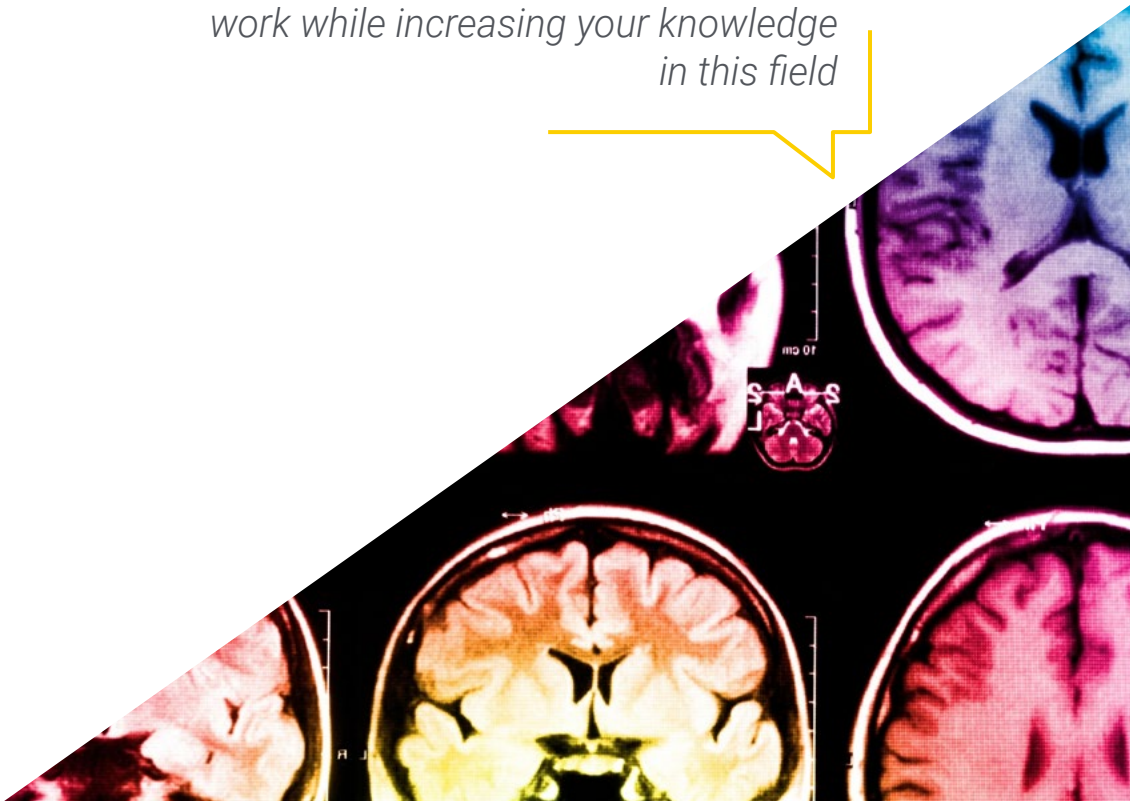
The audiovisual contents of this Postgraduate Diploma will allow you to progress quickly, incorporating the contents into your clinical practice immediately

This 100% online Postgraduate Diploma will allow you to combine your studies with your professional work while increasing your knowledge in this field

The teaching staff includes professionals from the healthcare sector, who bring their experience to this training 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 training programmed to train 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 academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Dementia with extensive experience.



02

Objectives

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

A qualitative leap of the highest level in your training that you can take 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.
- Train the students in the knowledge of the different assessment tools and cognitive rehabilitation used in various dementias.
- Understanding genetically conditioned dementias 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.

Specific Objectives

Module 1.

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

Module 2.

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

Module 3.

- 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 training program. Additionally, other recognized experts participate in its design and preparation, completing the program in an interdisciplinary manner.

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

International Guest Director

Internationally recognized for his contributions to Neurology, Dr. Richard Levy has extensively investigated the histology of Dementias and other brain pathologies. In particular, he has led multiple clinical trials at the Institute of Memory and Alzheimer's Disease (IM2A), associated with the Salpetrière Hospital, which have provided innovative results to understand many of the conditions related to the human nervous system.

His areas of expertise, in addition to Neurodegenerative Diseases, include Electrophysiology and executive functions. In the latter field, he has several analyses on frontal lobe capabilities in decision making and action planning. From the beginning of his career, in the laboratory of the renowned Professor Yves Agid, he conducted pioneering research on the anatomy of the Basal Ganglia. In this way, he has stood out for his innovative skills in the study of cognition and behavior, and was chosen for a postdoctoral stay in this field at Yale University.

Also, thanks to his cutting-edge knowledge, he has achieved prominent roles as the Director of the FRONTlab Research Team at the Brain and Spinal Cord Institute. From that scientific group he has also examined behavioral disorders targeting Apathy and Disinhibition. In parallel, he has numerous articles, published in high impact journals, widely cited by other experts.

In addition to his research work, Dr. Levy also has a prominent career in the clinical setting. His work as Director of the Department of Neurology at the Saint-Antoine University Hospital, or as head of the specialized unit at the Salpetrière Hospital, is evidence of this. In both institutions he collaborates with the care of patients with medical problems where the boundaries between Neurosciences and Psychiatry are blurred.

Dr. Levy, Richard

- Director of the FRONTlab of the Brain Institute of the Salpetrière Hospital, Paris, France
- Head of the Institute of Memory and Alzheimer's Disease (IM2A), associated with the Salpetrière Hospital
- Director of the Department of Neurology, Saint-Antoine University Hospital, Paris, France
- Academician at the Sorbonne University
- Doctorate in Medical Sciences from the Sorbonne University
- Research stay at Yale University, United States

Thanks to TECH, you will be able to learn with the best professionals in the world"

Management

Dr. Manzano Palomo, María del Sagrario

- Specialist in Neurology
- Clinical neurologist at the Infanta Leonor Hospital, Madrid. 28th October 2018
- Degree in Medicine from the Complutense University Madrid. June 2001

Dr. Esteve, Ainhoa

- Degree in Medicine and Surgery. University of Malaga. October, 2000.
- Master's Degree in Healthcare Management International University of La Rioja. 2019
- Master's Degree in Palliative Care University of Valladolid June 2007
- Specializing in Geriatrics via Internal Medicine Residency June 2002 - 2006. Cruz Roja Central Hospital Madrid.
- Geriatrics Faculty Area Specialist Geriatrics Department. Infanta Leonor University Hospital, Madrid. April 2013-present.

Dr. Rábano Gutiérrez del Arroyo, Alberto

- PhD Faculty of Sciences at the Autonomous University of Madrid March 2014
- Degree in Medicine and Surgery from the Faculty of Medicine at the Complutense University of Madrid June 1984
- Medical Specialist in Pathological Anatomy (Internal Medicine Residency), 1990.
- Co-ordinator at the Department of Neuropathology and Tissue Bank, CIEN Foundation (ISCIII)-Queen Sofia Foundation Alzheimer Center Scientific Director, CIEN Tissue Bank November 2007-present.

Dr. Zea, Marian

- PhD in Medicine from the University of La Laguna, Tenerife.
- Degree in Medicine and Surgery from the University of Granada
- Master's Degree in Neuro-immunology from the Autonomous University Madrid.
- Specialist in Neurology, University Hospital of the Canary Islands (La Laguna, Santa Cruz de Tenerife).
- Member of the Neurology Department- Alzheimer's Research Project Unit Reina Sofía Foundation CIEN Foundation
- Member of the team of the Diagnostic Guidance Unit in Dementias of the Research Center for Neurological Diseases Foundation (CIEN) Carlos III Health Institute. Madrid.
- Member of the group of the National Biobanks Platform Tissue Bank (BT-CIEN) Neurological Diseases Research Center Foundation Carlos III Health Institute. Madrid.

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. Molecular Neuroimaging in Dementias

1.1. Introduction.
1.2. Methodological Aspects
  1.2.1. Equipment SPECT and PET.
  1.2.2. Molecular Processes and Radiopharmaceuticals.
    1.2.3.1. Neuron Activity
    1.2.3.2. Dopaminergic Activity
    1.2.3.3. Amyloid Deposition
    1.2.3.4. Tau Deposit
    1.2.3.5. Neuroinflammation
  1.2.3. Image Analysis
    1.2.3.1. Visual Analysis
    1.2.3.2. Comparison with a Normal Database in Stereostatic Surface Projection (SSP).
    1.2.3.3. Voxel-Based Image Analysis.
1.3. Neuroimaging of Alzheimer's Disease.
  1.3.1. Mild Cognitive Impairment and Dementia.
  1.3.2. Atypical Forms
1.4. Neuroimaging in Fronto-temporal Dementia.
  1.4.1. FTD Variant in Behavior.
  1.4.4. Primary Aphasias
  1.4.3. Others.
1.5. Neuroimaging of Dementias with Parkinsonism.
  1.5.1. Lewy Body Dementia.
  1.5.2. Progressive Supranuclear Palsy.
  1.5.3. Corticobasal Degeneration
1.6. Diagnostic Algorithm
  1.6.1. Diagnostic Algorithm in Alzheimer's Disease.
  1.6.2 Diagnostic Algorithm in FTD and Dementia with Parkinsonism.
1.7. Case Studies.

Module 2. MRI in Dementias.

2.1. Introduction.
2.2. Diagnostic Algorithm
  2.2.1. CT and MRI in Cognitive Impairment Evaluation Classification of Dementias.
  2.2.2. White Matter Evaluation.
  2.2.3. Gray Matter Evaluation.
  2.2.4. Advanced Techniques: Perfusion, Diffusion, Spectroscopy, Functional MRI.
2.3. Potentially Treatable Causes of Dementia.
  2.3.1. Adult Hydrocephalus, Vascular Injuries.
  2.3.2. Surgical Injuries: Tumors, Subdural Hematoma.
  2.3.3. Inflammatory and Infectious Lesions.
2.4. Alzheimer's disease.
  2.4.1. Structural MRI: Typical and Atypical Phenotypes.
  2.4.2. Volumetry: Cortical Thickness, Hippocampi.
  2.4.3. Perfusion Techniques: Differential Diagnosis.
  2.4.5. Progression Markers
2.5. Vascular Dementia
  2.5.1. Small Vessel Disease.
  2.5.2. Multi-infarct Dementia.
  2.5.3. Microhemorrhages SWI Imaging
2.6. Other Degenerative Dementias.
  2.6.1. Fronto-Temporal Dementia.
  2.6.2. Lewy Body Dementia.
2.7. Future Perspectives
  2.7.1. Functional MRI and Brain Networks.
  2.7.2. Neuroimaging and Artificial Intelligence.

Module 3. Neuropathology in Dementias

3.1. Introduction.
- 3.1.1. Delimitation of the Scope of the Study.
- 3.1.2. Pathogenic Axis for the Interpretation of Histological Findings.
- 3.1.3. Sporadic vs. Genetic Diseases.
- 3.1.4. Diagnostic Criteria vs. Neuropathological Findings.

3.2. Levels of Study in Neuropathology.
- 3.2.1. Macroscopic
- 3.2.2. Histological
- 3.2.3. Molecular

3.3. Alzheimer's Type Pathology.
- 3.3.1. Macroscopic Findings
- 3.3.2. Characteristics of Histological Lesions.
- 3.3.3. Beta Amyloid Pathology.
- 3.3.4. TAU Pathology
- 3.3.5. Diagnostic Criteria and Stages.

3.4. Lewy Type Pathology.
- 3.4.1. Macroscopic Findings
- 3.4.2. Characteristics of Histological Lesions.
- 3.4.3. Lewy Body Dementia: Stages and Subtypes.
- 3.4.4. Lewy Disease as a Combined Pathology.

3.5. Tauopathies with Dementia:
- 3.5.1. Molecular Classification of Tauopathies.
- 3.5.2. Progressive Supranuclear Palsy.
- 3.5.3. Argyrophilic Grain Disease.
- 3.5.4. Corticobasal Degeneration
- 3.5.5. Pick Disease
- 3.5.6. Other Less Common Tauopathies.
- 3.5.7. Combined Pathology Tauopathies.

3.6. Pathology TDP-43
- 3.6.1. FTLD TDP-43 Classification
- 3.6.2. Sporadic FTLD
- 3.6.3. Genetics in FTLD
- 3.6.4. Hippocampal Sclerosis and LATE.

3.7. Rare FTLD and Other Uncommon Pathologies as a Cause of Neurodegenerative Dementia.

3.8. Human Prion Diseases.
- 3.8.1. Molecular Pathology of the Prionic Protein.
- 3.8.2. Sporadic Creutzfeldt-Jakob Disease: Molecular Subtypes.
- 3.8.3. Genetic Prionic Diseases.
- 3.8.4. Transmissible Prion Diseases.

3.9. Cerebrovascular Pathology and Dementia.
- 3.9.1. Basic Lesions and Assessment Strategy.
- 3.9.2. Post-infarction Dementia.
- 3.9.3. Dementia and Small Vessel Pathology.
- 3.9.4. Cerebrovascular Disease as a Combined Pathology.

This training will allow you to become a highly qualified professional, adding to your CV the competitiveness of a high-level postgraduate diploma in Dementias"

05

Methodology

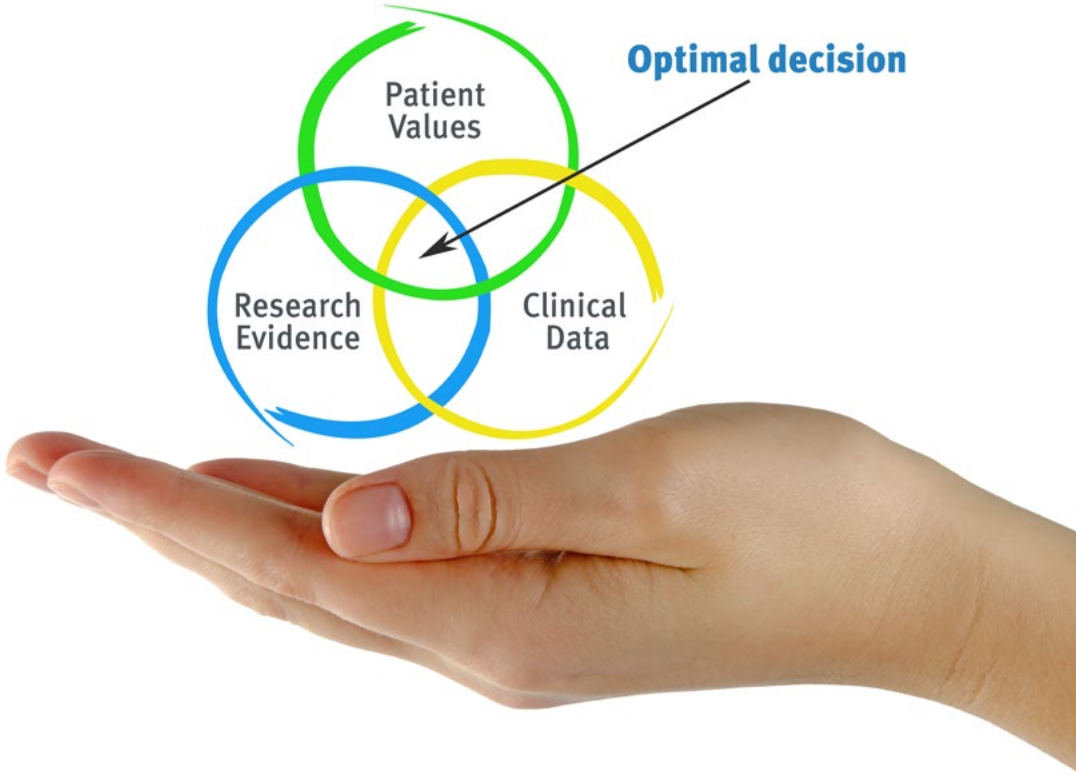
This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.
This teaching system is used in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine*** have considered it to be one of the most effective.

Discover Re-learning, 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"

At TECH we use the Case Method

In a given situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you can experience a way of learning that is shaking the foundations of traditional universities around the world



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching potential or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in professional medical practice.

Did you know that this method was developed in 1912 at Harvard for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method"

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

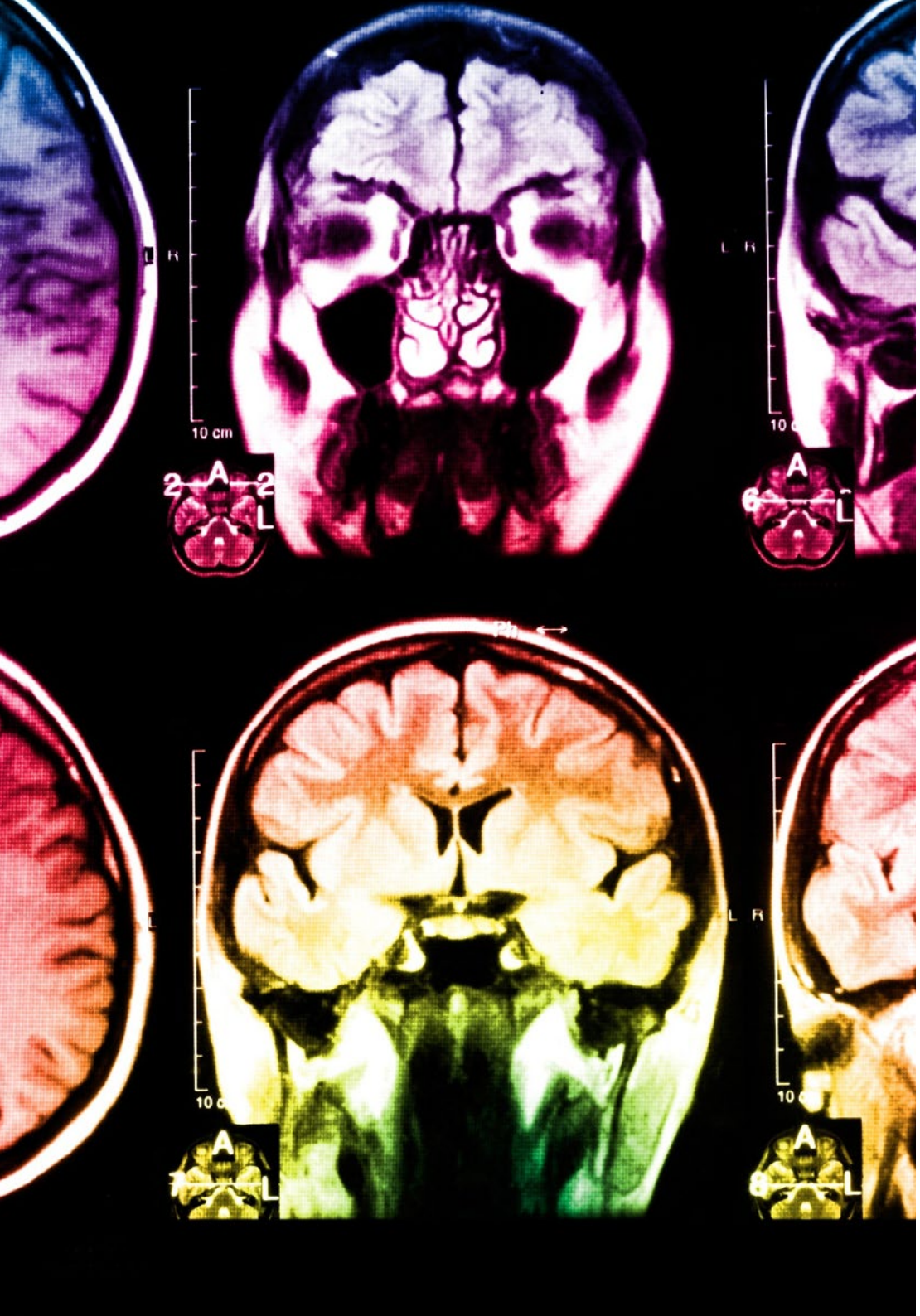
1. Students who follow this method not only grasp concepts, but also develop their mental capacity by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts 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.

Re-learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

Our University is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.

The physician will learn through real cases and by solving complex situations in simulated learning environments These simulations are developed using state-of-the-art software to facilitate immersive learning



At the forefront of world teaching, the Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

With this methodology we have trained more than 250,000 physicians with unprecedented success, in all clinical specialties regardless of the surgical load. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Re-learning 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

In our program, learning is not a linear process, but rather a spiral (we learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards

In this program you will have access to the best educational material, prepared with you 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.

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.

Latest Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.

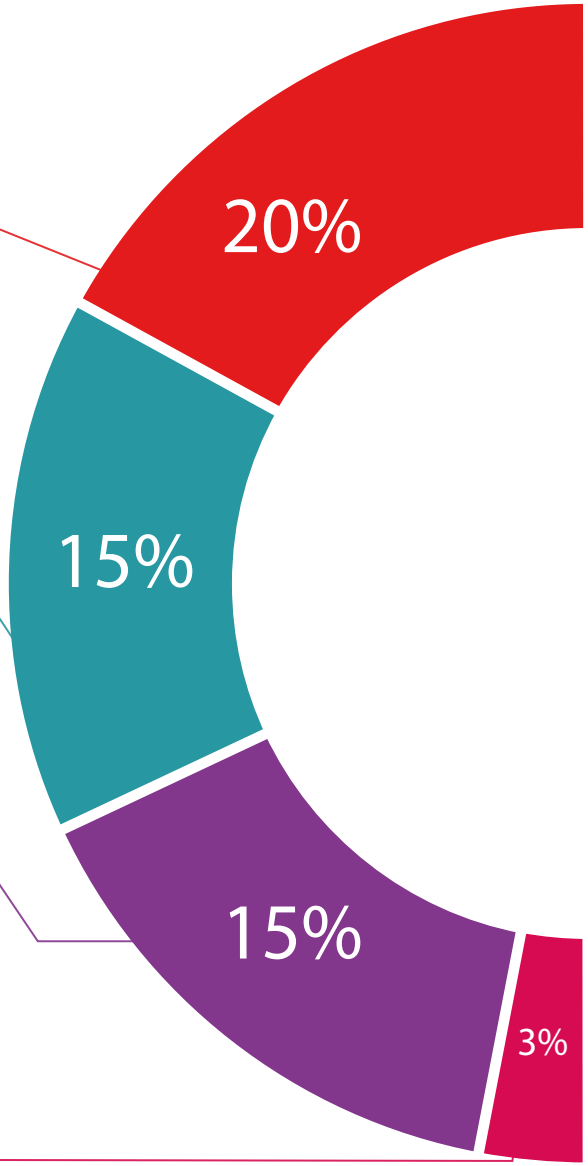
Interactive Summaries

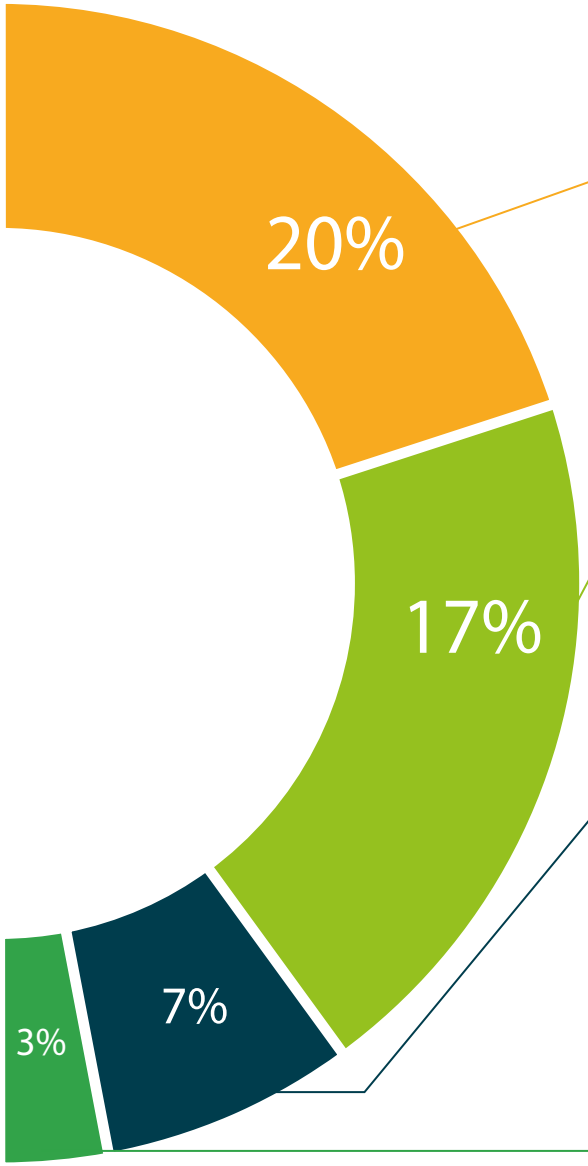
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system 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 training.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

Testing & Retesting

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you are achieving your goals.

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 our future difficult decisions.

Quick Action Guides

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.

06

Certificate

The **Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia** guarantees, in addition to the most rigorous and updated specialization, access to a Postgraduate Diploma issued by **TECH Global University**.

Successfully complete this training and receive your university certificate without travel or laborious paperwork"

This program will allow you to obtain your **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.

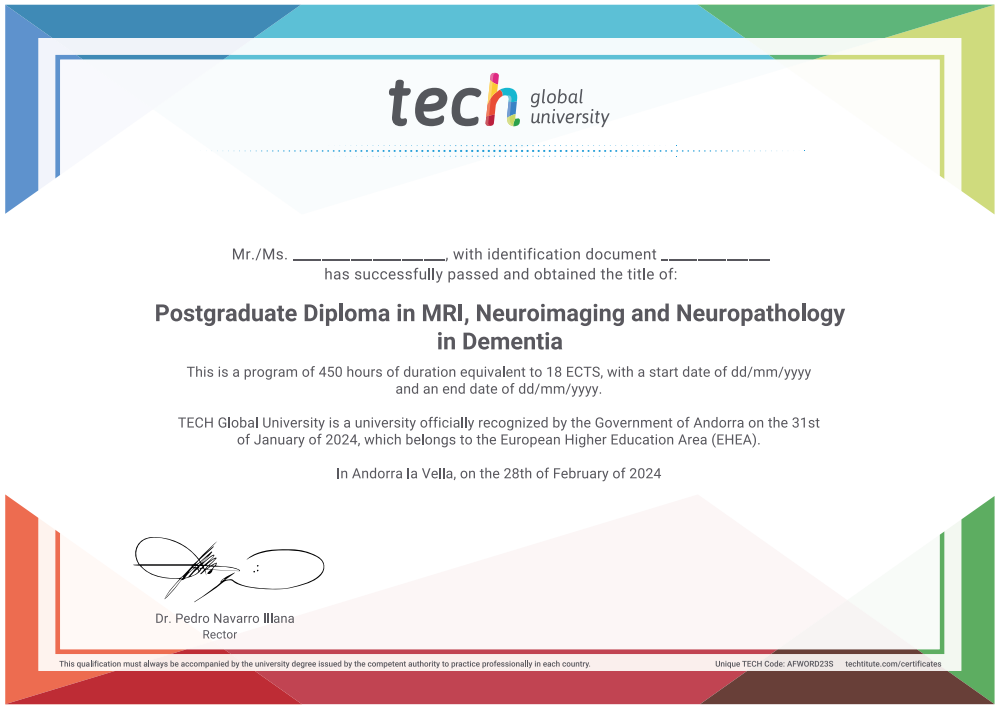
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in MRI, Neuroimaging and Neuropathology in Dementia**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**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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 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

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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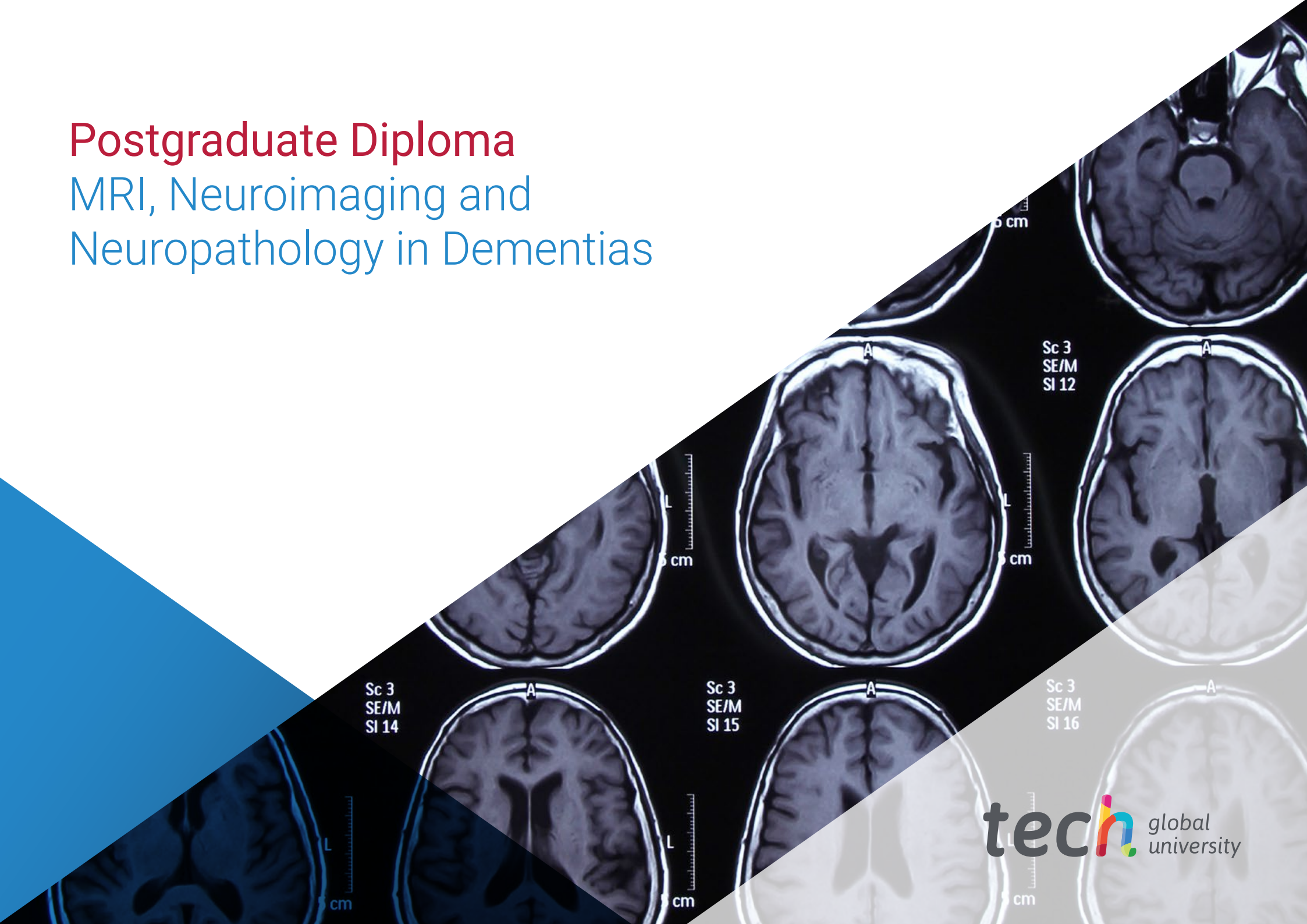

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