

# Postgraduate Diploma

## Nuclear Medicine in Adult Pathology



## Postgraduate Diploma Nuclear Medicine in Adult Pathology

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-nuclear-medicine-adult-pathology](http://www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-nuclear-medicine-adult-pathology)

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# 01

# Introduction

Nuclear Medicine has multiple applications to accurately detect and treat pathologies. In adult patients, this discipline has been a breakthrough in the detection and monitoring of various diseases. This population group includes people of different ages, and for that reason their specific treatments have sometimes been neglected. Thus, this qualification teaches the effective use of Nuclear Medicine to diagnose and treat pathologies in this type of patients, so that students who complete it become recognized physicians in their professional environments.





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*Apply Nuclear Medicine effectively in adults and become one of the most sought-after professionals in this area. Don't think twice and enroll in this specialization"*

The field of Nuclear Medicine is expanding. It is a discipline with numerous possibilities for growth, and one of its most innovative and booming avenues at present is its application to the adult population. This group of people has often been overlooked, because of their size no specific treatments are designed for them.

For this reason, this Postgraduate Diploma in Nuclear Medicine in Adult Pathology is a great advance for those physicians who wish to specialize in order to provide the best response to the different pathologies that can be treated with it. Thus, this qualification offers its students the necessary knowledge to become specialists in the field, being able to achieve significant progress in their careers thanks to what they have learned.

In this way, students will be able to learn in this program about issues such as Single Photon Emission Nuclear Medicine, infections and inflammations and the use of PET/CT-PET/MRI, all through an innovative teaching methodology 100% online based on the realization of practical cases, with which students will be able to combine their professional careers with their studies.

This **Postgraduate Diploma in Nuclear Medicine in Adults Pathology** contains the most complete and up-to-date educational program on the market. Its most notable

features are:

- ♦ The development of case studies presented by experts in Nuclear Medicine.
- ♦ 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.
- ♦ 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
- ♦ Access to content from any fixed or portable device with an Internet connection.



*Access the best Nuclear Medicine services thanks to your new expertise in adult pathology"*

“

*With this Postgraduate Diploma you will be able to update your knowledge in Nuclear Medicine, keeping abreast of the latest advances in the field"*

The program's teaching staff includes professionals from the sector who contribute their work 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 professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*If you want to know the latest developments in Nuclear Medicine, this qualification will help you to achieve it. Enroll now.*

*Your reputation will increase when you are able to apply the basics of Nuclear Medicine to treat your adult patients.*



# 02 Objectives

The main objective of this Postgraduate Diploma in Nuclear Medicine in Adult Pathology is to turn students into true specialists in the field, so that they can use their new skills in their practices. Thus, they will obtain a significant advance in their professional careers thanks to the application of the novel tools offered by the innovative field of Nuclear Medicine applied to the pathologies of adult patients.





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*Become a specialist in adult patient pathologies and enhance your reputation in the field of Nuclear Medicine”*



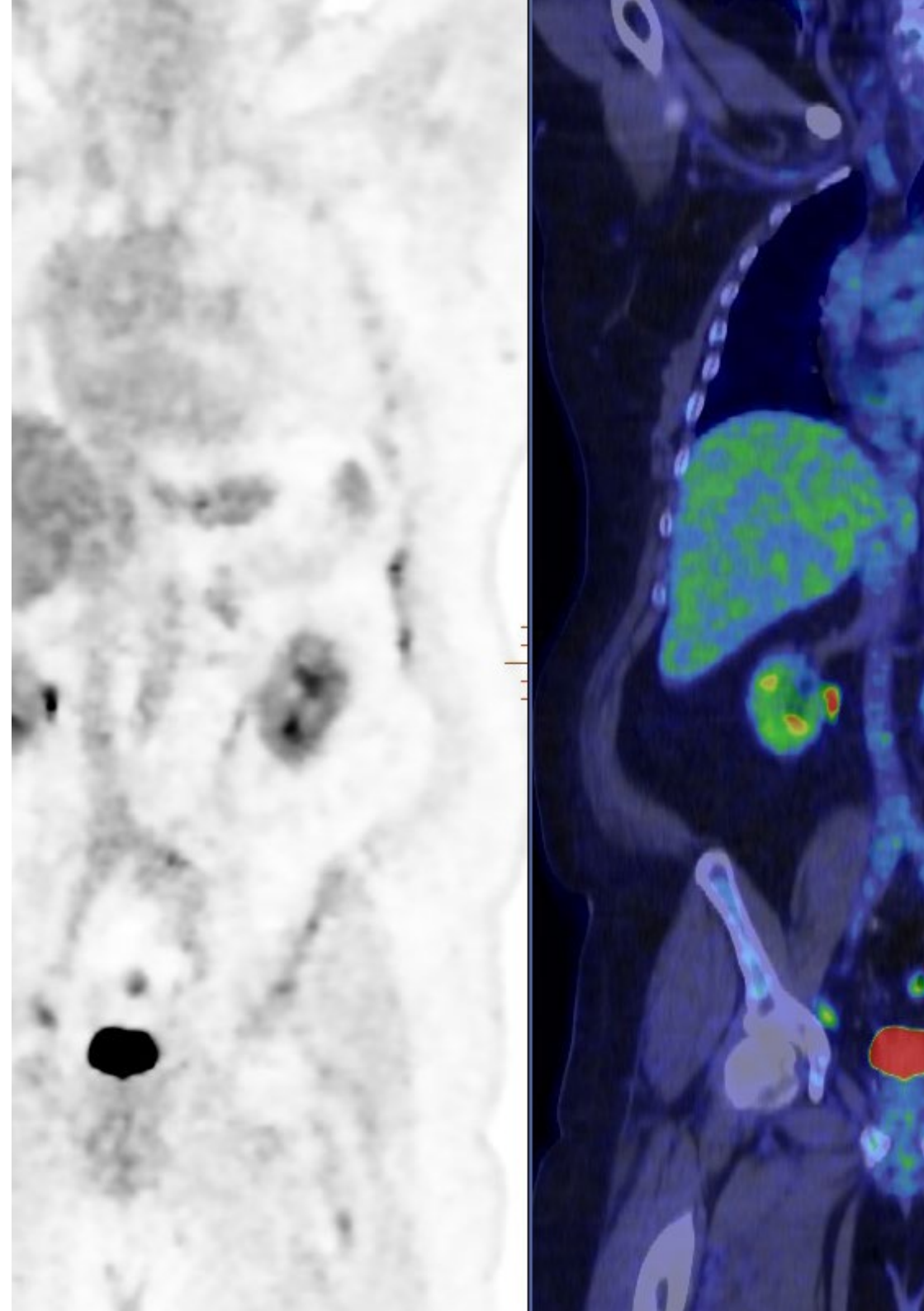
## General Objectives

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- Update the specialist in Nuclear Medicine
- Perform and interpret functional tests in an integrated and sequential manner
- Achieve diagnostic guidance for patients
- Assist in deciding the best therapeutic strategy, including radiometabolic therapy, for each patient
- Apply clinical and biochemical criteria for the diagnosis of infections and inflammations
- Understand the particularities of Nuclear Medicine applied to pediatric patients
- Learn about the new therapies of Nuclear Medicine

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*Enroll now and achieve the significant career advancement you've been waiting for"*





## Specific Objectives

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### Module 1. Single Photon Emission Nuclear Medicine

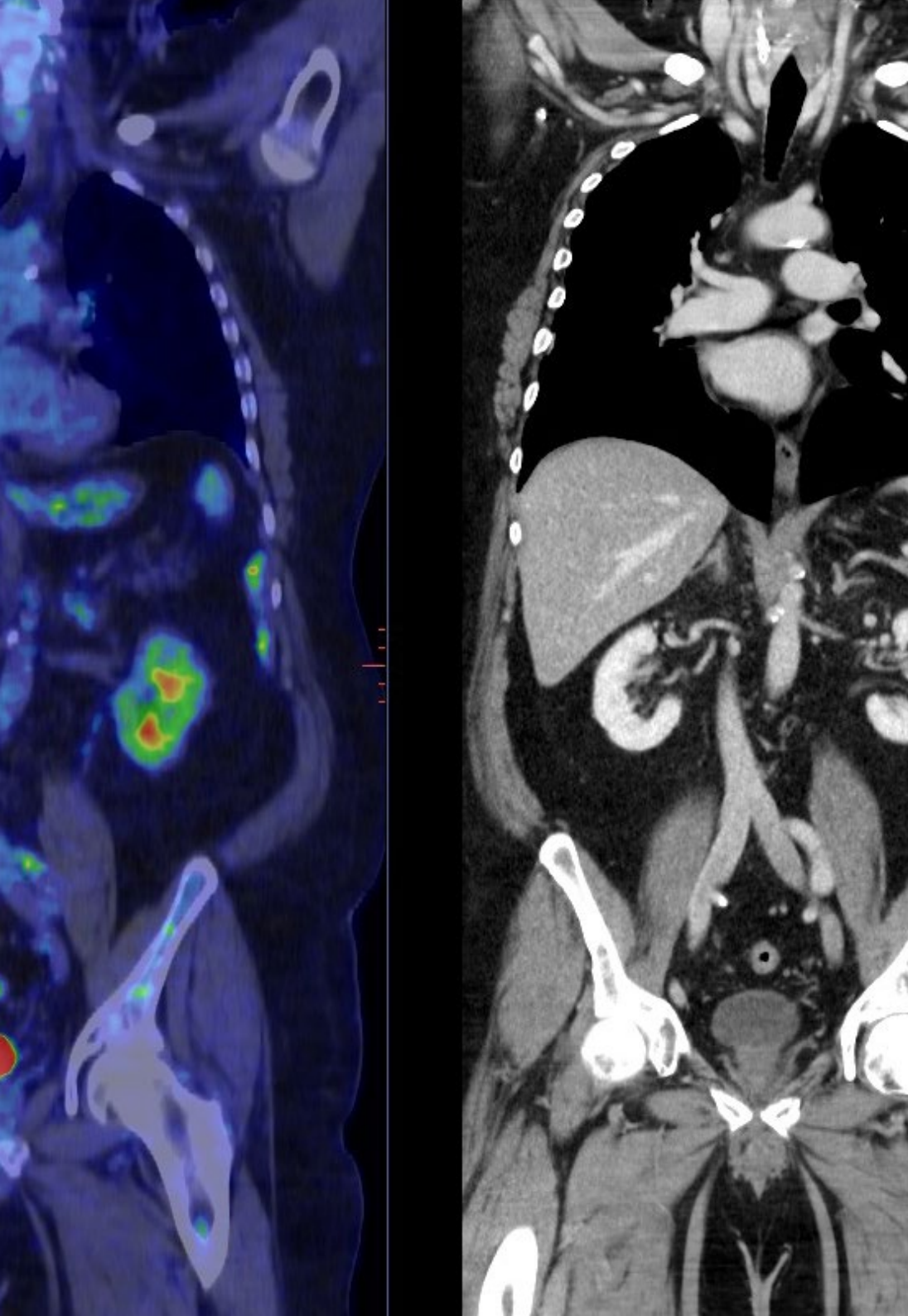
- ♦ Show the characteristic imaging patterns for new pathologies, the causes of diagnostic error and the update of advances in conventional Nuclear Medicine in a practical way.

### Module 2. Infection/Inflammation

- ♦ Delve into the application of molecular and morphofunctional imaging techniques in the field of Nuclear Medicine in the diagnosis, assessment of the extent and response to treatment of infectious/inflammatory pathology in the different organs and systems.
- ♦ Delve into the techniques applied in the specific clinical context.
- ♦ Accurate diagnosis with the least consumption of resources and radiation for the patient

### Module 3. PET/CT- PET/MRI in oncology clinical guidelines

- ♦ Delve into the role of PET/CT studies in tumors with the highest incidence
- ♦ Know its impact on diagnosis and staging and on response assessment and monitoring
- ♦ Analyze the positioning of the different scientific societies in the respective clinical guidelines



# 03

## Course Management

In order for the students of this Postgraduate Diploma in Nuclear Medicine in Adult Pathology to obtain the best possible learning process, TECH has ensured that great experts in the field are in charge of the teaching. Thus, this qualification has a high-level teaching staff specialized in Nuclear Medicine applied to adult patients, and will provide students with all the keys to this innovative area, so that they can apply it immediately in their professional careers.





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*Great specialists in adult patients and Nuclear Medicine bring you closer to these complex subjects to become a highly sought-after expert"*

## Management



### Dr. Mitjavila, Mercedes

- Head of Nuclear Medicine Service Puerta de Hierro University Hospital Majadahonda, Madrid
- Project Manager of the Nuclear Medicine Unit in the Diagnostic Imaging Department of the Alcorcón Foundation University Hospital
- Head of Service of Nuclear Medicine of the Puerta de Hierro Hospital Majadahonda. Competitive examination BOCM
- Degree in Medicine and General Surgery from the University of Alcalá de Henares
- MIR in Nuclear Medicine Specialist by the MIR System
- PhD in Medicine and General Surgery from the University of Alcalá de Henares
- Interim Physician of the Nuclear Medicine Service of the Ramón y Cajal Hospital
- Interim Physician in the Nuclear Medicine Unit at Getafe University Hospital

## Professors

### Dr. Paniagua Correa, Cándida

- ♦ Medical Specialist in Nuclear Medicine with practice at Getafe Hospital
- ♦ Professional practice as a Nuclear Medicine Specialist in the Nuclear Medicine Department of the Quirón Madrid University Hospital
- ♦ Collaborating professor in the training of residents in the specialty of Nuclear Medicine at the Getafe Hospital
- ♦ Degree in Medicine and Surgery from the Complutense University
- ♦ Specialist in Nuclear Medicine. MIR at the University Hospital of Getafe
- ♦ PhD in Dermatology Complutense University of Madrid
- ♦ Radioactive Facilities Supervisor License issued by the Nuclear Safety Council
- ♦ Member of Spanish Society of Nuclear Medicine

### Dr. Rodríguez Alfonso, Begoña

- ♦ Elective Puerta de Hierro University Hospital
- ♦ Elective La Paz University Hospital
- ♦ Elective Ciudad Real General Hospital
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Official Doctoral Program in Medicine and Surgery Autonomous University of Madrid

### Dr. Mucientes, Jorge

- ♦ Nuclear Medicine Area Specialist at the Puerta de Hierro Majadahonda University

Hospital

- ♦ Nuclear Medicine Resident Tutor at Puerta de Hierro University Hospital
- ♦ Coordinator of Quality of the Nuclear Medicine Service of the University Hospital
- ♦ Puerta De Hierro
- ♦ Degree in Medicine and Surgery. University of Alcalá
- ♦ PhD in Medicine Cum Laude, at the Complutense University of Madrid

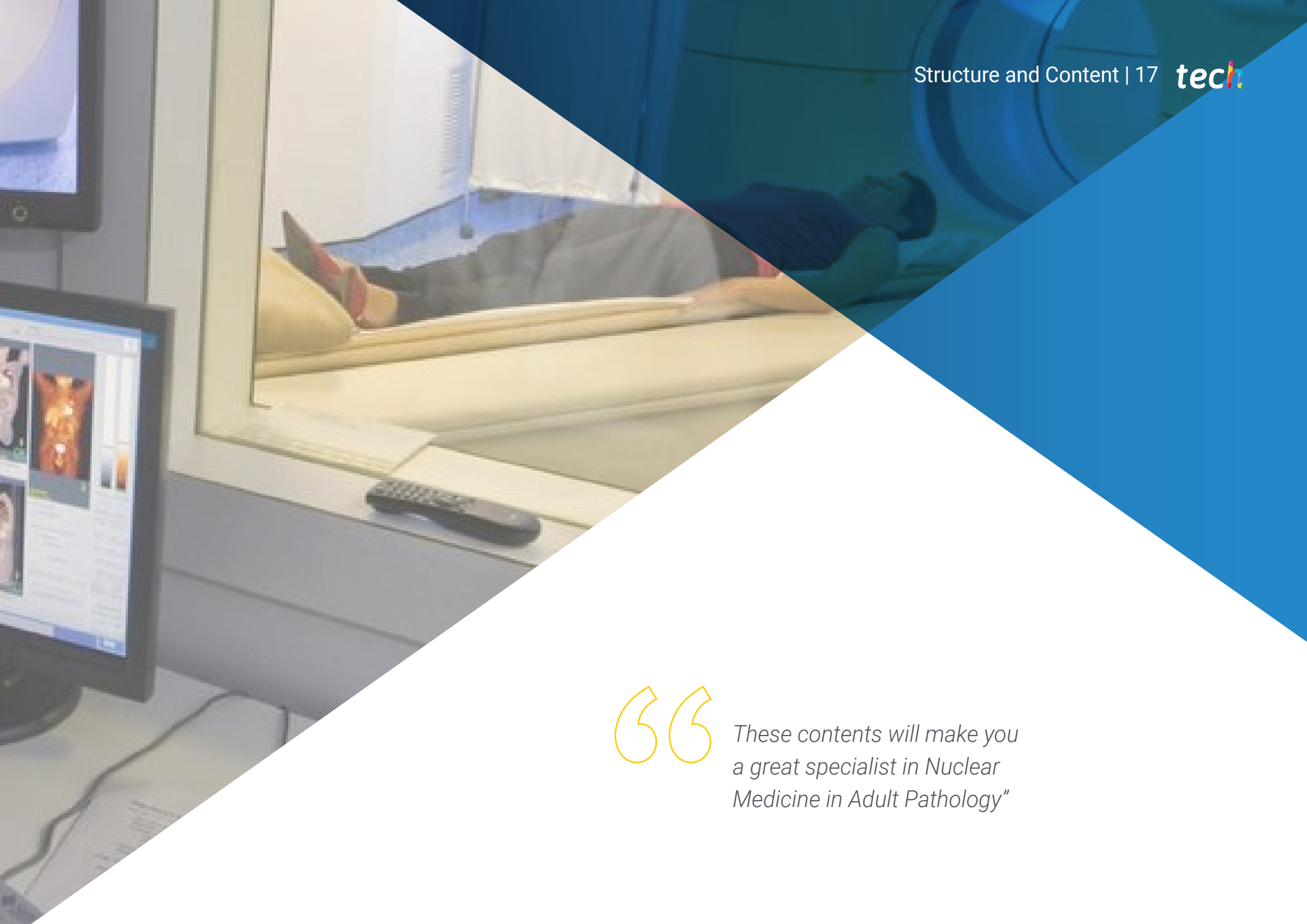
# 04

## Structure and Content

This Postgraduate Diploma in Nuclear Medicine in Adult Pathology is composed of 3 modules through which students will be able to learn everything about Nuclear Medicine by single photon emission, PET/CT and PET/MR imaging diagnostic methods and PET gammagraphic studies and tracers applied to inflammation and infections. In this way, students will become true specialists in these subjects, and will be able to offer their patients all the techniques learned here immediately.







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*These contents will make you  
a great specialist in Nuclear  
Medicine in Adult Pathology”*

**Module 1. Single Photon Emission Nuclear Medicine: "pearls and pitfalls"**

- 1.1. Pneumology
  - 1.1.1. Perfusion/Ventilation
  - 1.1.2. Pulmonary Thromboembolism
  - 1.1.3. Pulmonary Hypertension
  - 1.1.4. Lung Transplant
  - 1.1.5. Pleuroperitoneal Fistula: Cirrhotic Patient, Peritoneal Dialysis
- 1.2. Cardiology
  - 1.2.1. Perfusion: Ischemic Heart Disease, Cellular Viability, Contribution
  - 1.2.2. GATED, Myocarditis
  - 1.2.3. *Shunt*: Left-Right, Right-Left
  - 1.2.4. Ventricular Function: Ischemic Cardiopathy, Cardiotoxicity
  - 1.2.5. Cardiac Innervation: Cardiac Pathology, Neurological Pathology
- 1.3. Vascular and Lymphatic System
  - 1.3.1. Peripheral Endothelial Function
  - 1.3.2. Lower Limb Perfusion
  - 1.3.3. Lymphogrammagraphy
- 1.4. Osteoarticular
  - 1.4.1. Primary Benign and Malignant Tumor Pathology: Planar Imaging
  - 1.4.2. Hybrid Image Contribution
  - 1.4.3. Bone Metastasis: Contributions of SPECT and SPECT/CT, Usefulness in Diagnosis and Monitoring
  - 1.4.4. Benign Pathology: Metabolic Disease, Sports Pathology
- 1.5. Nephrourology
  - 1.5.1. Assessment of Renal Malformations
  - 1.5.2. Obstructive Pathology: Hydronephrosis in Pediatric Age: Diagnosis and Monitoring, Adult Hydronephrosis, Urinary Diversion Study
  - 1.5.3. Pyelonephritis: Initial Diagnosis, Evolution
  - 1.5.4. Renal Transplantation: Rejection, Tubular Necrosis, Nephrotoxicity, Urinary Leakage
  - 1.5.5. Vasculorenal Hypertension: Diagnosis, Monitoring
  - 1.5.6. Glomerular Filtration and Effective Renal Plasma Flow
  - 1.5.7. Cystogrammagraphy: Direct and Indirect in the Diagnosis and Monitoring of Vesicoureteral Reflux
- 1.6. Gastroenterology
  - 1.6.1. Salivary Glands: Autoimmune Pathology, Post-radiation Damage, Salivary Gland Tumors
  - 1.6.2. Digestive Transit: Esophageal Transit, Gastroesophageal Reflux, Pulmonary Aspiration, Gastric Emptying
  - 1.6.3. Gastrointestinal Bleeding: Study with Labeled Red Blood Cells, Study with Radiocolloids
  - 1.6.4. Hepatobiliary Pathology: Aliaxic Cholecystitis, Hepatic Functional Reserve Assessment, Hepatic Transplantation ( Rejection, Biliary Leakage), Biliary Tract Atresia
  - 1.6.5. Bile Acid Malabsorption
  - 1.6.6. Inflammatory Bowel Disease: Diagnosis, Monitoring and Complications
  - 1.6.7. Hepatic Space-Occupying Lesion: Hepatic Hemangioma, Focal Nodular Hyperplasia vs. Adenoma
  - 1.6.8. Cell Labeling: Method and Indications
  - 1.6.9. Red Blood Cells: In Vivo, In Vitro, In Vivitro
  - 1.6.10. Leukocytes
- 1.7. Splenic Pathology
  - 1.7.1. Hepatic Space-Occupying Lesions: Hemangioma, Hamartoma
  - 1.7.2. Splenosis: Study with Denatured Labeled Red Cells
  - 1.7.3. Cell Hijacking
- 1.8. Endocrinology
  - 1.8.1. Thyroid: Hyperfunctioning Thyroid ( Autoimmune, Thyroiditis), Thyroid Nodule, Differentiated Thyroid Carcinoma
  - 1.8.2. Parathyroid: Hyperfunctioning Gland Location
  - 1.8.3. Adrenal Glands: Adrenal Cortex Pathology (Hypercortisolism, Hyperaldosteronism), Adrenal Medulla Pathology (Hyperplasia, Pheochromocytoma), Adrenal Incidentaloma
- 1.9. Neurology SPECT vs. PET:
  - 1.9.1. Cognitive Impairment: Characteristic Patterns and Differential Diagnosis
  - 1.9.2. Movement Disorders: Parkinson's Disease, Parkinson Plus and Differential Diagnosis



- 1.9.3. Epilepsy: Preoperative Assessment, Acquisition Protocols
- 1.10. Oncology: Tumor Viability, Radionecrosis vs. Progression
  - 1.10.1. Brain Death
  - 1.10.2. Cerebrospinal Fluid (CSF)-Cysternography Kinetics: Hydrocephalus, CSF Leakage

## Module 2. Infection/Inflammation: Gammagraphic Studies and PET Tracers

- 2.1. Osteoarticular
  - 2.1.1. Osteomyelitis: Previously Healthy Bone, Diabetic Patient, Spine Surgery
  - 2.1.2. Prosthesis: Septic vs. Aseptic Mobilization
- 2.2. Cardiac
  - 2.2.1. Endocarditis: Native Valve, Prosthetic Valve
  - 2.2.2. Myocarditis: Infectious vs. Inflammatory
  - 2.2.3. Intracardiac Devices
- 2.3. Vascular
  - 2.3.1. Inflammatory Vasculitis
  - 2.3.2. Prosthetic Graft Infection
- 2.4. Encephalitis: PET-FDG Study
  - 2.4.1. Paraneoplastic
  - 2.4.2. Infectious: Patterns and Differential Diagnosis
- 2.5. Fever of Unknown Origin
  - 2.5.1. Immunosuppressed Patients
  - 2.5.2. Postoperative Fever and Recurrent Sepsis
- 2.6. Systemic Disease
  - 2.6.1. Sarcoidosis: Diagnosis, Extent and Response to Treatment
  - 2.6.2. IgG4-related Disease
- 2.7. Other Locations
  - 2.7.1. Hepatorenal Polycystic Kidney Disease: Localization of the Infectious

- Focus
- 2.7.2. Hepatobiliary: Post-surgical Patient
- 2.8. Covid-19
  - 2.8.1. Nuclear Medicine Studies in Acute Phase: Pulmonary Inflammation, Pulmonary Thromboembolism, Oncology Patient and Covid-19
  - 2.8.2. Utility of Nuclear Medicine in Postcovid Pathology: Pulmonary, Systemic
  - 2.8.3. Organizational Changes in a Pandemic Situation

### Module 3. PET/CT- PET/MRI in Oncology Clinical Guidelines

- 3.1. Nuclear Medicine in Different Tumors
  - 3.1.1. Staging and Prognosis
  - 3.1.2. Response to Treatment
  - 3.1.3. Monitoring and Diagnosis of Recurrence
- 3.2. Lymphomas
  - 3.2.1. Hodgkin's Lymphoma
  - 3.2.2. Diffuse Large B-cell Lymphoma
  - 3.2.3. Other Lymphomas
- 3.3. Breast Cancer
  - 3.3.1. Initial Staging
  - 3.3.2. Response to Neoadjuvant
  - 3.3.3. Monitoring
- 3.4. Gynecologic Tumors
  - 3.4.1. Vagina Cervix: Staging, Response to Treatment and Monitoring
  - 3.4.2. Endometrium: Staging, Response to Treatment and Monitoring
  - 3.4.3. Ovaries: Staging, Response to Treatment and Monitoring
- 3.5. Lung Cancer
  - 3.5.1. Non-small Cell Lung Carcinoma
  - 3.5.2. Small Cell Lung Carcinoma
  - 3.5.3. Response Assessment: Radiotherapy, Immunotherapy
- 3.6. Digestive System Tumors
  - 3.6.1. Esophago-Gastric
  - 3.6.2. Colorectal
  - 3.6.3. Pancreas





- 3.6.4. Hepatobiliary: Hepatocarcinoma, Cholangiocarcinoma
- 3.7. Sarcomas
  - 3.7.1. Bones
  - 3.7.2. Soft Parts
- 3.8. Urogenitals
  - 3.8.1. Prostate
  - 3.8.2. Renal
  - 3.8.3. Bladder
  - 3.8.4. Testicle
- 3.9. Endocrine
  - 3.9.1. Thyroid
  - 3.9.2. Adrenal Gland
- 3.10. Radiotherapy Planning
  - 3.10.1. Acquisition of Exploration
  - 3.10.2. Volume Delimitation



*The most innovative contents  
in adult pathology and Nuclear  
Medicine are here"*

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***.



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*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"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will 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 power 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 the physician's professional practice.



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*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 achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate 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.



## Relearning Methodology

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

This 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, a real revolution with respect to the mere study and analysis of cases.



*Professionals will learn through real cases and by resolving 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 Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*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.*

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.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



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.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### 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 multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".



#### 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.





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, 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 students' knowledge throughout the program, through assessment and self-assessment activities and exercises: so that they can see how they are achieving your goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.



#### 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 Nuclear Medicine in Adults Pathology guarantees, in addition to the most rigorous and up-to-date training, access to a certificate issued by TECH Technological University.



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*Successfully complete this training program  
and receive your university certificate  
without travel or laborious paperwork”*

This **Postgraduate Diploma in Nuclear Medicine in Adults Pathology** contains the most complete and up-to-date scientific program on the market.

After passing the assessments, the student will receive their corresponding certificate issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Nuclear Medicine in Adult Pathology**

Official N° of hours: **450 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
online training  
development language  
virtual classroom



**Postgraduate Diploma**  
Nuclear Medicine in Adult  
Pathology

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

# Postgraduate Diploma

## Nuclear Medicine in Adult Pathology

