



## Postgraduate Certificate

Nuclear Medicine for Nursing

» Modality: online

» Duration: 12 weeks

» Certificate: TECH Global University

» Credits: 12 ECTS

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/us/nursing/postgraduate-certificate/nuclear-medicine-nursing

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### tech 06 | Introduction

The administration of radiopharmaceuticals used in Nuclear Medicine requires meticulous and precise attention to avoid dosing errors and ensure that patients receive the right amount of radiation. This has made nursing a crucial profession in this area, where nurses are responsible for treating radioactive materials as responsibly as possible.

For this reason, it is really important for these professionals to be updated in this area in order to assist patients more effectively, as well as to explain the risks and benefits of these treatments or to provide emotional and psychological support during the process. It is in this context that the present Postgraduate Certificate arises, which addresses the different lines of Nuclear Medicine, from isotopic studies of the musculoskeletal system to studies in Neurology, including digestive pathology, endocrinology, cardiology and pneumology. In addition, the nurses will delve into bone, salivary, esophageal transit, gastric emptying and hepatosplenic scintigraphy, as well as isotopic investigations for the diagnosis of thyroid and parathyroid pathology.

But the best thing is that the format of the program is 100% online so that the students can update from home or anywhere at their own pace, always according to their needs and availability. In addition, the program has a great teaching team made up of experts in Nuclear Medicine and Nursing, who will provide constant support to the students. Undoubtedly, a truly valuable opportunity that will launch the nurses' career to new heights.

This **Postgraduate Certificate in Nuclear Medicine for Nursing** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of practical case studies presented by experts in Nuclear Medicine for Nursing
- Graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection



This is the perfect academic opportunity to get up to date on the latest isotopic studies of the musculoskeletal system"



Review the latest advances in equilibrium and first-pass ventriculography by viewing dynamic explanatory videos or interactive diagrams"

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.

Its multimedia content, developed with the latest educational technology, will provide the professionals with situated and contextual learning, i.e., a simulated environment that will provide an immersive education programmed to learn in real situations.

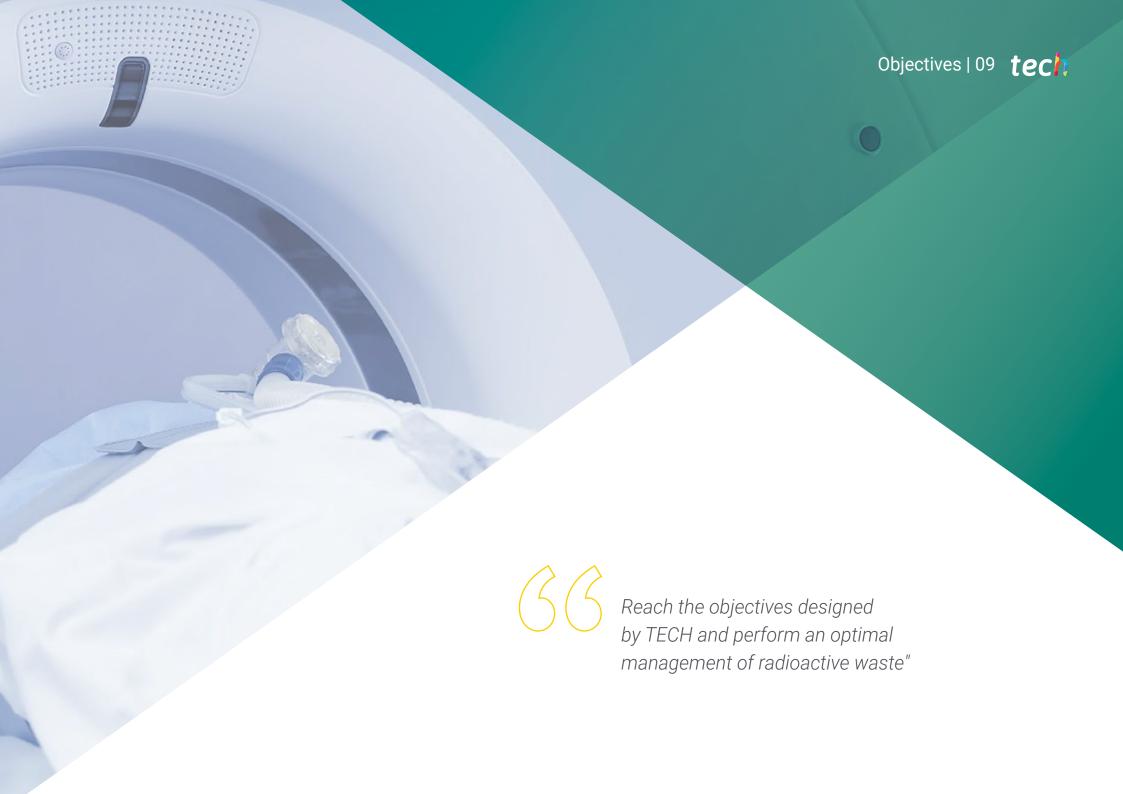
This program's design focuses on Problem-Based Learning, through which the professionals must try to solve the different professional practice situations that arise during the academic program. For this purpose, the students will be assisted by an innovative interactive video system created by renowned experts.

Learn more about the most relevant studies for the diagnosis of Pulmonary Thromboembolism thanks to this program.

Access a complete digital library on Nuclear Medicine for Nursing with resources available 24 hours a day.





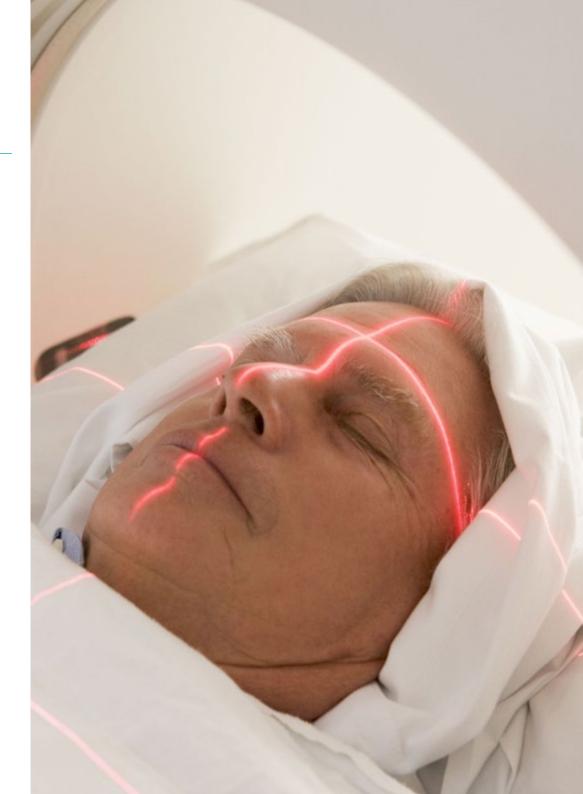


### tech 10 | Objectives



### **General Objectives**

- Promote work strategies based on the practical knowledge of a tertiary level hospital and its application in Diagnostic Imaging, Nuclear Medicine and Radiation Oncology services
- Favor the enhancement of technical skills and abilities through care procedures and case studies
- Provide nurses with a process of updating their knowledge in the field of Radiology
- Be up to date with the care management and organization of the Diagnostic Imaging and Treatment Area, in order to optimize the operation of the Radiology Service
- Develop skills and competencies in nurses for their performance in the nursing consultation in the Diagnostic Imaging and Treatment Department (DTI)
- Expand nurses' knowledge of radiation oncology, interventional vascular radiology and neuroradiology to improve patient care in these specific areas
- Develop nurses' skills in performing image-guided procedures, including breast and brachytherapy, to improve the quality of patient care and optimize clinical outcomes





### **Specific Objectives**

- Describe the object of Nuclear Medicine, its physical and chemical fundamentals
- Update knowledge in the handling of radiopharmaceuticals
- Delve into the radioprotection norms appropriate to each radiopharmaceutical and to train us to carry out health education in their application in the intra and intra-hospital environment
- Carry out a correct management of radioactive waste
- Develop nursing skills in techniques derived from metabolic therapies
- Understand the studies performed in PET and the role of the nurse in the care of patients undergoing this test
- Delve into the different techniques of medical diagnostic imaging in MN
- Define the characteristics of radioactive decay, types of radiation, its interaction with the environment and the consequences of clinical interest
- Delve into the structure of a generator
- Differentiate the concepts of radiopharmaceutical, radiotracer and radionuclide
- Describe the general characteristics of radionuclides
- Develop what an activimeter is used for and how it works
- Identify the different elements of a gamma camera
- Describe the basics of scintigraphic imaging
- Evaluate the advantages and disadvantages of scintigraphy
- Identify the main therapeutic applications of some radioisotopes

- Describe the characteristics and kinetics of radiopharmaceuticals associated with each diagnostic examination
- Delve into the development of the studies performed in the Nuclear Medicine Department and the use of the gamma camera
- Delve into the different nursing procedures of isotopic studies in neurology, pneumology, nephrourology, cardiology, vascular, musculoskeletal, hepatic, biliary, etc
- Implement the nursing care process for patients undergoing Gammacamera studies
- Manage the different radiological protection recommendations and their correct explanation to patients and health personnel outside the MN service



Don't miss the opportunity to delve into the different nursing procedures of isotopic studies in Neurology, Pneumology, Nephrourology or Cardiology"





### tech 14 | Course Management

### Management



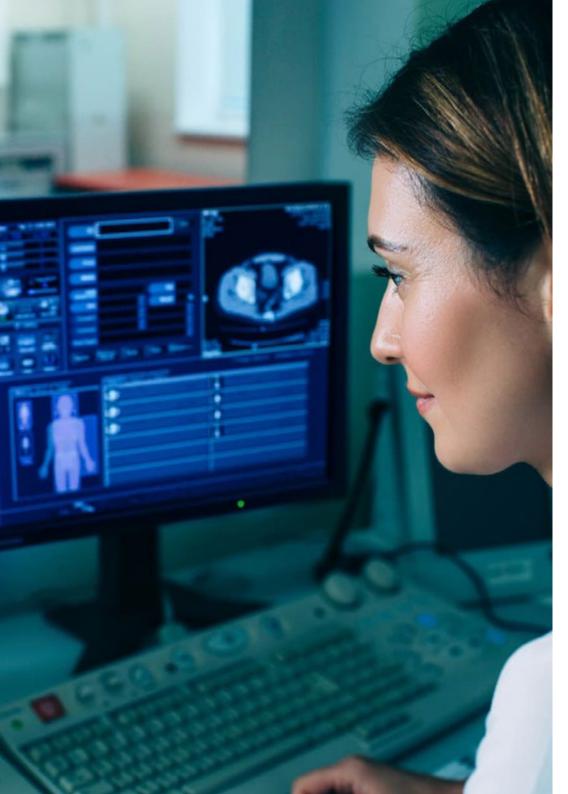
### Ms. Viciana Fernández, Carolina

- Nurse in the Radiodiagnosis and Nuclear Medicine
- Postgraduate Certificate in Nursing
- Professional Master's Degree in Pediatric Nursing
- University Specialist in Emergency and Catastrophe Nursing
- University Specialist in Nursing in the Surgical Area
- Nuclear Medicine Radioactive Installations Operator License by the Nuclear Safety Council



### Ms. García Argüelles, Noelia

- Area Supervisor of Diagnostic Imaging and Treatment at the Asturias University Central Hospital
- Professor in the Department of Medicine at the University of Oviedo
- Professor at numerous conferences and congresses, including the Congress of the Society of Radiological Nursing
- Postgraduate Certificate in Nursing
- Professional Master's Degree in Prevention Management in the Company
- Professional Master's Degree in Urgency, Emergencies and Catastrophes
- Member of the panel of auditors authorized by the Quality Assessment Unit of the Health Service of the Principality of Asturias
- Certificate of Pedagogical Aptitude for Secondary Education Teachers
- Radioactive Facilities Operator License in Nuclear Medicine by the Nuclear Safety Council



### Course Management | 15 tech

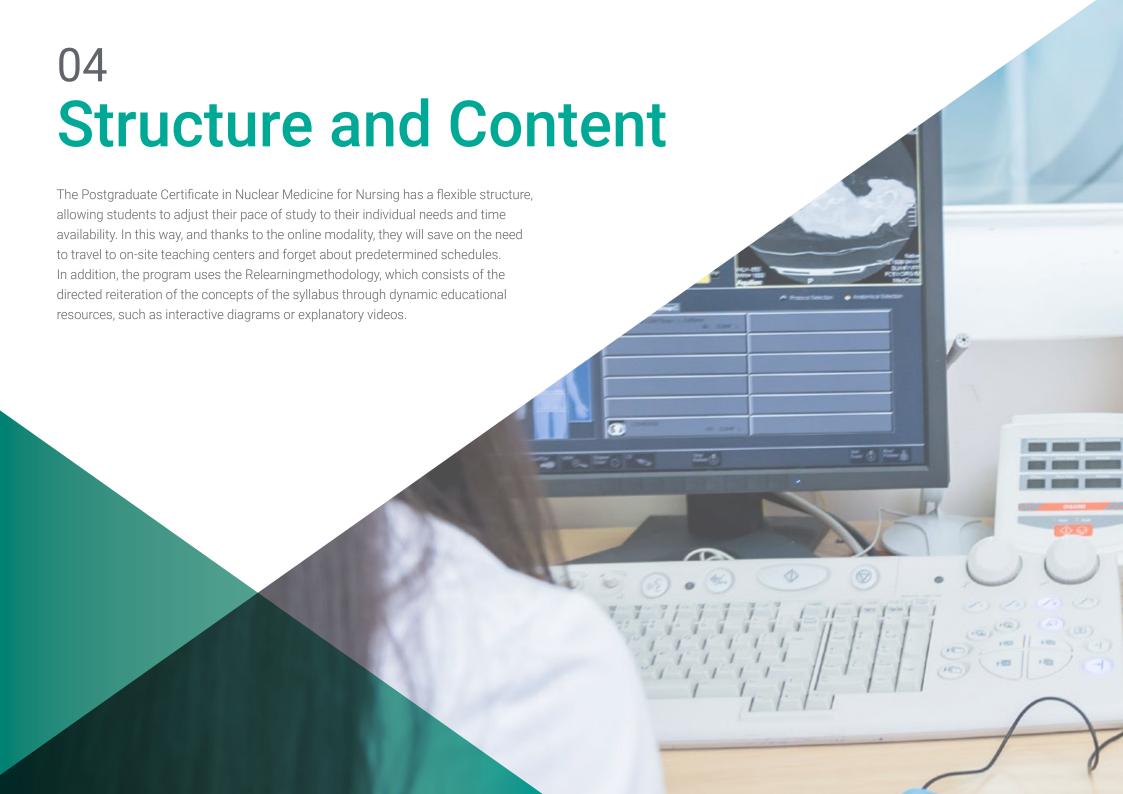
#### **Professors**

#### Ms. Busta Díaz, Mónica

- Supervisor of the Nuclear Medicine Service at the Central University Hospital of Asturias
- Postgraduate Certificate in Nursing
- Bachelor's Degree in History
- Postgraduate Diploma in Intensive Care Unit Nursing
- Postgraduate Diploma in in Dialysis Nursing
- Postgraduate Diploma in Surgical Fields in Nursing
- Postgraduate Diploma in Hemotherapy
- Nuclear Medicine Radioactive Installations Operator's License. Nuclear Safety Council
- Member of: Scientific Committee during the XX Congress of the Spanish Society of Radiological Nursing 2022



Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"



### Structure and Content | 17 tech



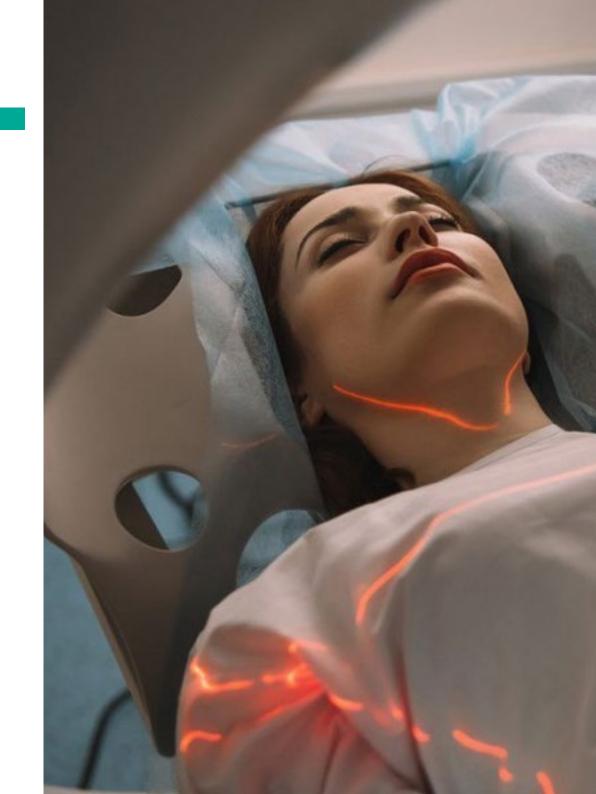
Enjoy a syllabus that will take you through the entire history of Nuclear Medicine and its different fields of application"



### tech 18 | Structure and Content

### Module 1. Nuclear Medicine I

- 1.1. What is Nuclear Medicine?
  - 1.1.1. Introduction to Nuclear Medicine
  - 1.1.2. History of Nuclear Medicine
  - 1.1.3. Fields of Application of Nuclear Medicine
  - 1.1.4. Radiopharmaceuticals
- 1.2. Physical Fundamentals of Nuclear Medicine
  - 1.2.1. Key Concepts
  - 1.2.2. Structure of Matter
  - 1.2.3. Electromagnetic Radiation
  - 1.2.4. Atomic Structure Bohr Atom
  - 1.2.5. Nuclear Structure
  - 1.2.6. Radioactivity and Nuclear Reactions
  - 1.2.7. Interaction of Radiation with Matter
- 1.3. Chemical Fundamentals of Nuclear Medicine
  - 1.3.1. Key Concepts
  - 1.3.2. Obtaining Radionuclides
  - 1.3.3. Radionuclide Generators
  - 1.3.4. Structure of a Molybdenum/Tecnetium Generator
  - 1.3.5. Tagging Mechanisms
- 1.4. Radiopharmaceuticals
  - 1.4.1. Characteristics of the Ideal Radiopharmaceutical
  - 1.4.2. Physical Form and Routes of Administration of Radiopharmaceuticals
  - 1.4.3. Localization Mechanisms of Radiopharmaceuticals
- 1.5. Fundamentals of Radiological Prevention in Nuclear Medicine
  - 1.5.1. Key Concepts
  - 1.5.2. Quantities and Units
  - 1.5.3. Fundamentals of Radiological Prevention in Nuclear Medicine
    - 1.5.3.1. Patients
    - 1.5.3.2. Workers and Members of the Public
    - 1.5.3.3. Pregnancy and Breastfeeding



- 1.6. Fundamentals of Radiological Prevention and Medical Physics in Nuclear Medicine
  - 1.6.1. Key Concepts
  - 1.6.2. Radiation Detection and Measurement
    - 1621 Gas Ionization Detectors
    - 1.6.2.2. Semiconductor Detectors
    - 1.6.2.3. Scintillation Detectors
  - 1.6.3. Radiation Protection Standards
- 1.7. Radioactive Waste
  - 1.7.1. Key Concepts
  - 1.7.2. Radioactive Sources out of Use
  - 1.7.3. Solid Waste Materials with Radioactive Content
  - 1.7.4. Liquid Radioactive Waste
- 1.8. Instrumentation in Nuclear Medicine
  - 1.8.1. Key Concepts
  - 1.8.2. Activimeter or Dose Calibrators
  - 1.8.3. Gamma Camera and SPECT
    - 1.8.3.1. Gammacamera Detectors
    - 1.8.3.2. Collimation
    - 1.8.3.3. Image Correctors
    - 1.8.3.4. Planar Image Formation
    - 1.8.3.5. Tomographic Acquisition
  - 1.8.4. PET
    - 1.8.4.1. Detectors Used in PET
    - 1.8.4.2. PET Image Formation
- 1.9. Radiometabolic Therapy
  - 1.9.1. Treatment of Metastatic Bone Pain
  - 1.9.2. Treatment of Differentiated Thyroid Cancer
  - 1.9.3. Treatment of Hyperthyroidism
  - 1.9.4. Treatment of Non-Hodgkin's Lymphoma
  - 1.9.5. Treatment of Neuroendocrine Tumors
  - 1.9.6. Radiosynoviorthesis

- 1.10. Scans performed in PET. Nursing care and attention
  - 1.10.1. Radionuclides and radiopharmaceuticals in PET
  - 1.10.2. Types of Studies
  - 1.10.3. Nursing Care at the PET-FDG
  - 1.10.4. Nursing Care in the PET-Colina
  - 1.10.5. Nursing care in the PET-Vizamil PET
  - 1.10.6. Nursing Care at the PET-DOPA
  - 1.10.7. Nursing Care at the PET-PSMA
  - 1.10.8. Nursing Care in the Myocardial Viability PET

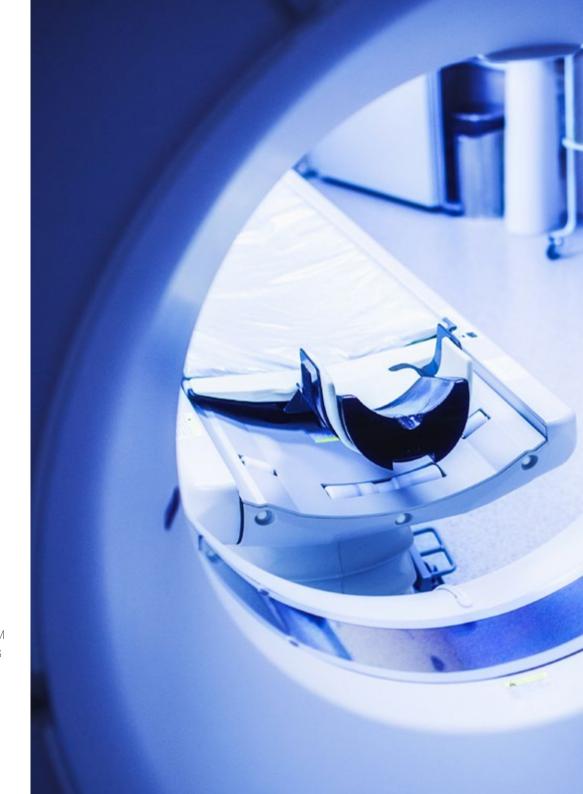
#### Module 2. Nuclear Medicine II Isotopic Studies

- 2.1. Isotopic studies of the musculoskeletal system. Nursing care and attention
  - 2.1.1. Bone scintigraphy
  - 2.1.2. Three-phase bone scintigraphy
  - 2.1.3. Bone Marrow Gammagraphy
  - 2.1.4. Isotopic studies for diagnosis in Inflammatory and Infectious Pathology
    - 2.1.4.1. 67Ga
    - 2.1.4.2. Labeled leukocytes
- 2.2. Isotopic studies in Digestive Pathology. Nursing Care and Attention
  - 2.2.1. Anatomophysiological Recall
  - 2.2.2. Salivary Gammagraphy
  - 2.2.3. Esophageal Transit Scintigraphy
  - 2.2.4. Gastric scintigraphy Detection of ectopic gastric mucosa Meckel's Diverticulum
  - 2.2.5. Gastric Emptying Scintigraphy
  - 2.2.6. Gammagraphy for detection of Gastroesophageal Reflux
  - 2.2.7. Gammagraphy for the diagnosis of Digestive Hemorrhage
- 2.3. Isotopic studies in splenic and biliary pathology. Nursing Care and Attention
  - 2.3.1. Anatomophysiological Recall
  - 2.3.2. Hepatosplenic Scintigraphy
  - 2.3.3. Hepatobiliary Gammagraphy
  - 2.3.4. Bad absorption of biliary salts

### tech 20 | Structure and Content

2.	4.	Isotopic	studies i	in End	ocrinology.	Nursina	Care and	Attention

- 2.4.1. Isotopic studies for diagnosis from Thyroid Pathology
- 2.4.2. Isotopic studies for diagnosis from Parathyroid Pathology
- 2.4.3. Isotopic studies for diagnosis from Adrenal Glands Pathology
- 2.5. Isotopic studies in Cardiology. Nursing Care and Attention
  - 2.5.1. Study of Cardiac Function
    - 2.5.1.1. Equilibrium ventriculography
    - 2.5.1.2. First-pass ventriculography
  - 2.5.2. Study of Myocardial Perfusion
    - 2.5.2.1. Myocardial perfusion SPECT during exercise
    - 2.5.2.2. Myocardial perfusion SPECT at rest
  - 2.5.3. PET
- 2.6. Isotopic studies in Pneumology. Nursing Care and Attention
  - 2.6.1. Anatomophysiological Recall
  - 2.6.2. Studies for the diagnosis of pulmonary thromboembolism
    - 2.6.2.1. Pulmonary Ventilation Scintigraphy
    - 2.6.2.2. Pulmonary Perfusion Scintigraphy
  - 2.6.3. Diffuse Interstitial Lung Disease Evaluation Scintigraphy
  - 2.6.4. Gammagraphy in the evaluation of Infectious Processes
  - 2.6.5. Gammagraphy in the evaluation of Thoracic Neoplasms
- 2.7. Isotopic studies in Neurology. Nursing Care and Attention
  - 2.7.1. Anatomophysiological Recall
  - 2.7.2. Brain perfusion SPECT Technique Clinical applications
  - 2.7.3. Studies for the diagnosis of Epilepsies
    - 2.7.3.1. CSF fistula detection. Cisternography
  - 2.7.4. Studies for the diagnosis of Movement Disorders
    - 2.7.4.1. Studies for the differential diagnosis of Parkinsonisms
    - 2.7.4.2. Study of Dopamine Transporters DATSCAN
    - 2.7.4.3. Study of postsynaptic D2 Dopaminergic Dopamine Receptors. 123I-IBZM
    - 2.7.4.4. Myocardial Sympathetic Sympathetic Denervation Study with 123I-MIBG
  - 2.7.5. Studies for the diagnosis of Cerebrovascular Pathology and Encephalic Death 99Tc-HMPAO





### Structure and Content | 21 tech

- 2.8. Isotopic studies in Nephrourology. Nursing Care and Attention
  - 2.8.1. Anatomophysiological Recall
  - 2.8.2. Studies for the diagnosis of Renal Functionality.. Glomerular filtration
  - 2.8.3. Isotopic Renogram
  - 2.8.4. Renal Cortical Gammagraphy: DMSA
  - 2.8.5. Isotopic cystography
  - 2.8.6. Scrotal or testicular scintigraphy
- 2.9. Isotopic studies in Vascular Pathology. Nursing Care and Attention
  - 2.9.1. Anatomophysiological Recall
  - 2.9.2. Isotopic phlebography
  - 2.9.3. Lymphogrammagraphy
  - 2.9.4. Sentinel lymph node study
    - 2.9.4.1. Sentinel Lymph Node in Breast Cancer
    - 2.9.4.2. Sentinel lymph node in malignant melanoma
    - 2.9.4.3. Sentinel node in other applications
- 2.10. Isotopic studies in Oncology. Nursing Care and Attention
  - 2.10.1. Tracking with 67 Ga citrate
  - 2.10.2. Tracking with 99mTc-sestaMIBI
  - 2.10.3. Traceback with 123I-MIBG and 131I-MIBG
  - 2.10.4. Traceback with labeled peptides
  - 2.10.5. Traceback with labeled monoclonal antibodies

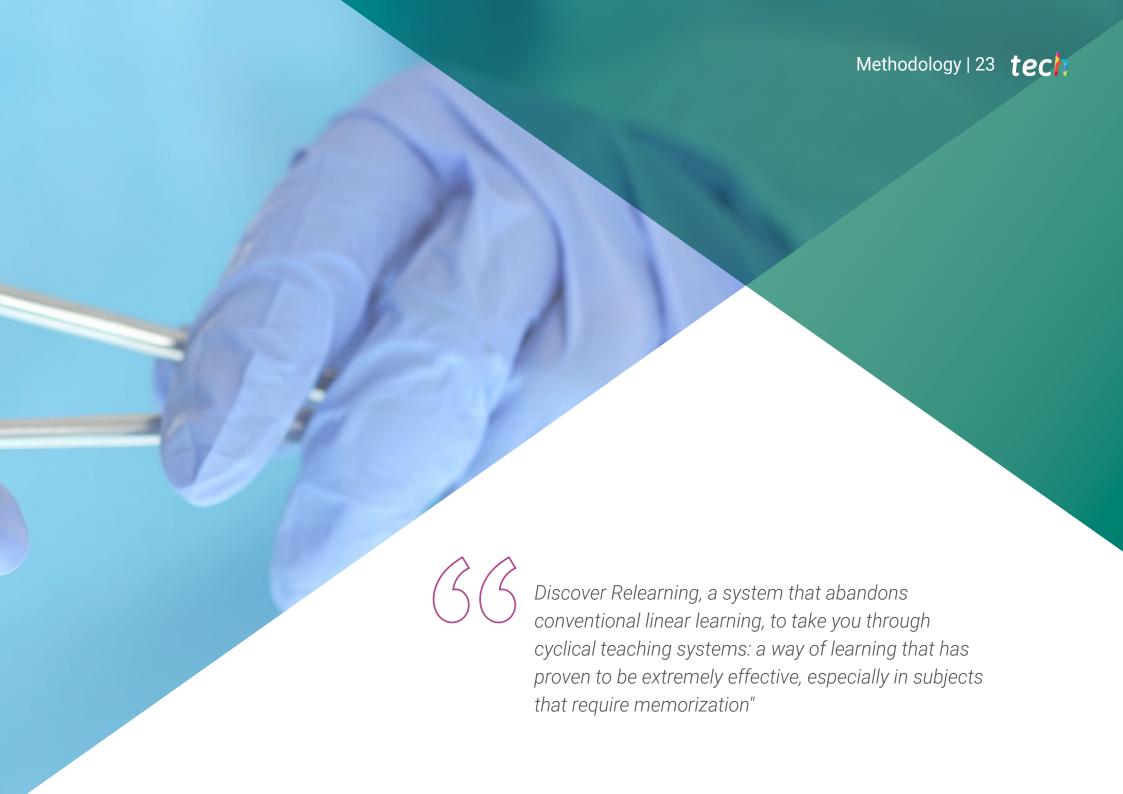


You will only need a PC or Tablet with an Internet connection to benefit from the most global and up-to-date view of Nuclear Medicine for Nursing"



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.

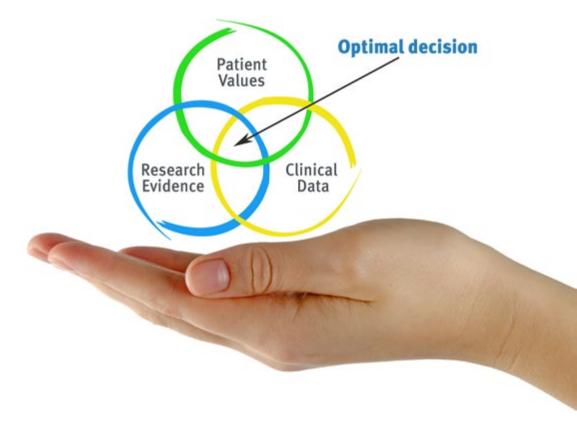


### tech 24 | Methodology

### At TECH Nursing School we use the Case Method

In a given situation, what should a professional do? 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. Nurses learn better, faster, and more sustainably over time.

With TECH, nurses can experience a learning methodology 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, in an attempt to recreate the real conditions in professional nursing 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:

- Nurses 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 nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
- 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 case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine case studies with a 100% online learning system based on repetition combining a minimum of 8 different elements in each lesson, which is a real revolution compared to the simple study and analysis of cases.

The nurse 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.



### Methodology | 27 tech

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 we have trained more than 175,000 nurses with unprecedented success in all specialities regardless of practical workload. 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 really 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.



#### **Nursing Techniques and Procedures on Video**

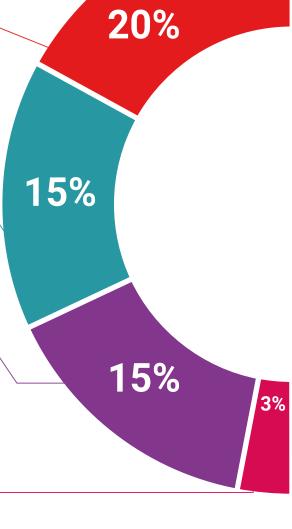
We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch them as many times as you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



#### **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".





#### **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.



## **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.



#### Classes

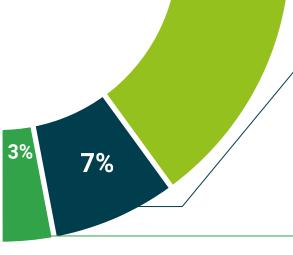
There is scientific evidence suggesting that observing third-party experts can be useful. Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### **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.





20%

17%





### tech 32 | Certificate

This program will allow you to obtain your **Postgraduate Certificate in Nuclear Medicine for Nursing** endorsed by **TECH Global University**, the world's largest online university.

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

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

Title: Postgraduate Certificate in Nuclear Medicine for Nursing

Modality: online

Duration: 12 weeks

Accreditation: 12 ECTS



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

#### Postgraduate Certificate in Nuclear Medicine for Nursing

This is a program of 360 hours of duration equivalent to 12 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



<sup>\*</sup>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.

health confidence people
leducation information tutors
guarantee accreditation teaching
institutions technology learning



# Postgraduate Certificate Nuclear Medicine for Nursing

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