Postgraduate Certificate

Radiation Protection in Hospital Radioactive Facilities

tech technological university

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Postgraduate Certificate

Radiation Protection in Hospital Radioactive Facilities

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

Website: www.techtitute.com/us/medicine/postgraduate-certificate/radiation-protection-hospital-radioactive-facilities

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01

Introduction

Despite the benefits of ionizing radiation in destroying tumor cells, the emergence of new technologies poses additional challenges in terms of radiation protection. Personnel in areas such as Nuclear Medicine, Radiation Oncology and Radiodiagnostics are exposed daily to irradiation that can have detrimental effects on their health. For this reason, it is vital that physicians are properly specialized to handle protective equipment and follow established safety procedures to the letter in order to minimize the different exposures. In this context, TECH is launching this comprehensive program covering the safety protocols to be applied in hospital facilities in the presence of radioactive components. In addition, it is taught 100% online for greater convenience.

You will manage the dosimetric control of exposed professionals and update your knowledge on dose limits through this Postgraduate Certificate"

International radiation protection regulations are fundamental to ensure uniform practices and safety measures in environments where ionizing radiation is used. In this way, regulations establish dose limits with the purpose of protecting the health of the general population. However, with the advance of technological tools, there are many changes in the recommendations that experts need to be aware of in order to apply them to their clinical practice. In this regard, specialists should keep abreast of the publications of international scientific bodies such as the United Nations Scientific Committee on the Effects of Atomic Radiation.

In order to help experts learn about the latest trends, TECH will develop a cutting-edge program. Through its agenda, specialists will delve into the international regulations on health protection against ionizing radiation. They will also address specific measures to protect both patients and employees from X-rays. At the same time, the didactic contents will analyze in depth procedures for the calibration and verification of radiation protection instrumentation (among which environmental radiation detectors stand out). The program will also emphasize the creation of structural shielding in medical radioactive facilities, so that graduates will be able to follow the most relevant parameters and perform thickness calculations in an adequate manner.

It should be noted that TECH will use the revolutionary *Relearning* system to consolidate all these contents. This learning method will focus on the reiteration of the most important concepts, ensuring that students will assimilate them naturally and progressively. The only thing students will need is a device with Internet access to access their materials in a personalized way, without any restrictions and 24 hours a day. In addition, you will have the possibility to download the entire syllabus to store it and visualize it in the future.

This **Postgraduate Certificate in Radiation Protection in Hospital Radioactive Facilities** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

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

You will perform the most accurate thickness calculations and how to apply them in medical practice thanks to the contents of this innovative university program"

Looking to specialize in hermeticity control of encapsulated radioactive sources? Get it thanks to this advanced program in 100% online format"

Optimal management of personal dosimetry after completing 6 weeks of study with TECH, the best digital university in the world according to Forbes.

Take advantage of all the benefits of the Relearning methodology, which will allow you to organize your time and pace of study, adapting to your schedule.

The program's teaching staff includes professionals from the sector who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

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

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

After completing this Postgraduate Certificate, students will be highly qualified to identify the existing risks derived from the use of ionizing radiation in hospital radioactive facilities. They will also be able to make the leap to the most prestigious Radiophysics services to provide radiological protection measures aimed at guaranteeing safety in the handling of irradiations.
They will also have an in-depth knowledge of current international legislation governing radiation protection, both for workers and for patient safety.

You will be updated on the latest trends in international regulations applicable to the specialty of Hospital Radiophysics"

General Objectives

- Analyze the basic interactions of ionizing radiation with tissues
- Establish the effects and risks of ionizing radiation at the cellular level
- Analyze elements of photon and electron beam measurement in external radiotherapy
- Examine the quality control program
- Identify the different planning techniques for external radiotherapy treatments
- Analyze the interactions of protons with matter
- Examine radiation protection and radiobiology in Proton Therapy
- Analyze the technology and equipment used in intraoperative radiation therapy
- Examine the clinical outcomes of Brachytherapy in different oncological contexts
- Analyze the importance of the Radiological Protection
- Assimilate the existing risks derived from the use of ionizing radiation
- Develop the international regulations applicable to radiation protection

Specific Objectives

- Determine the radiological risks present in hospital radioactive facilities, as well as the specific magnitudes and units applied in these cases
- Establish the concepts applicable to the design of a radioactive facility, knowing the main specific parameters

Design and manage the structural shielding against existing radiation in Hospitals"

03

Course Management

This program is formed by a group of experts in the field of Radiation Protection in hospitals. These professionals have an extensive work background, being part of prestigious health entities. In their commitment to improve the quality of life, they pour into this course their years of experience and skills so that students can perfect their diagnostic skills.

From the hand of true leaders in Nuclear Medicine and Radiophysics, you will incorporate the latest trends in calibration and verification of instrumentation"

Management

Dr. De Luis Pérez, Francisco Javier

- Specialist in Hospital Radiophysics
- Head of the Radiophysics and Radiological Protection Service at Quirónsalud Hospitals in Alicante, Torrevieja and Murcia
- Research Group in Personalized Multidisciplinary Oncology, Universidad Católica San Antonio de Murcia
- PhD in Applied Physics and Renewable Energies, University of Almeria
- Degree in Physical Sciences, specializing in Theoretical Physics, University of Granada
- Member of: Spanish Society of Medical Physics (SEFM), Royal Spanish Society of Physics (RSEF), Illustrious Official College of Physicists and Consulting and Contact Committee, Proton Therapy, Center (Quirónsalud)

Professors

Dr. Rodríguez, Carlos Andrés

- Specialist in Hospital Radiophysics
- Physician in Hospital Radiophysics at the University Clinical Hospital of Valladolid, head of the Nuclear Medicine section
- Principal Tutor of residents of the Department of Radiophysics and Radiological Protection of the Hospital Clínico Universitario de Valladolid
- Degree in Hospital Radiophysics
- Degree in Physics at the University of Salamanca

04

Structure and Content

After a historical review of the harmful effects suffered by the pioneers in the world of radiation, this TECH syllabus will address the evolution of this subject up to its own legislation to govern safety standards. Likewise, the program will delve into the substantial differences existing in the handling of radiation in 3 main fields: Nuclear Medicine, Radiation Oncology and Radiodiagnostics. The didactic materials will also analyze the main actions carried out in a Radiological Protection service. These include the management of personal dosimetry or the control of encapsulated radioactive sources.

You will analyze by means of real cases and complex situations in simulated learning environments throughout this Postgraduate Certificate"

Module 1. Radiation Protection in Hospital Radioactive Facilities

1.1. Radiation Protection in Hospitals
- 1.1.1. Radiation Protection in Hospitals
- 1.1.2. Radiological Protection Magnitudes and Specialized Radiation Protection Units
- 1.1.3. Risks in the Hospital Area

1.2. International Radiation Protection Standards
- 1.2.1. International Legal Framework and Authorizations
- 1.2.2. International Regulations on Health Protection against Ionizing Radiation
- 1.2.3. International Regulations on Radiological Protection of the Patient
- 1.2.4. International Regulations on the Specialty of Hospital Radiophysics
- 1.2.5. Other International Regulations

1.3. Radiation Protection in Hospital Radioactive Facilities
- 1.3.1. Nuclear Medicine
- 1.3.2. Radiodiagnostics
- 1.3.3. Radiotherapy Oncology

1.4. Dosimetric Control of Exposed Professionals
- 1.4.1. Dosimetric Control
- 1.4.2. Dose Limits
- 1.4.3. Personal Dosimetry Management

1.5. Calibration and Verification of Radiation Protection Instrumentation
- 1.5.1. Calibration and Verification of Radiation Protection Instrumentation
- 1.5.2. Verification of Environmental Radiation Detectors
- 1.5.3. Verification of Surface Contamination Detectors

1.6. Tightness Control of Encapsulated Radioactive Sources
- 1.6.1. Tightness Control of Encapsulated Radioactive Sources
- 1.6.2. Methodology
- 1.6.3. International Limits and Certificates

1.7. Design of Structural Shielding in Medical Radioactive Facilities
- 1.7.1. Design of Structural Shielding in Medical Radioactive Facilities
- 1.7.2. Important Parameters
- 1.7.3. Thickness Calculation

1.8. Structural Shielding Design in Nuclear Medicine
- 1.8.1. Structural Shielding Design in Nuclear Medicine
- 1.8.2. Nuclear Medicine Facilities
- 1.8.3. Calculation of the Workload

1.9. Structural Shielding Design in Radiotherapy
- 1.9.1. Structural Shielding Design in Radiotherapy
- 1.9.2. Radiotherapy Facilities
- 1.9.3. Calculation of the Workload

1.10. Structural Shielding Design in Radiodiagnostics
- 1.10.1. Structural Shielding Design in Radiodiagnostics
- 1.10.2. Radiodiagnostics Facilities
- 1.10.3. Calculation of the Workload

Enroll now in this TECH program where you will update your healthcare skills and give a definite boost to your career path"

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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.

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:

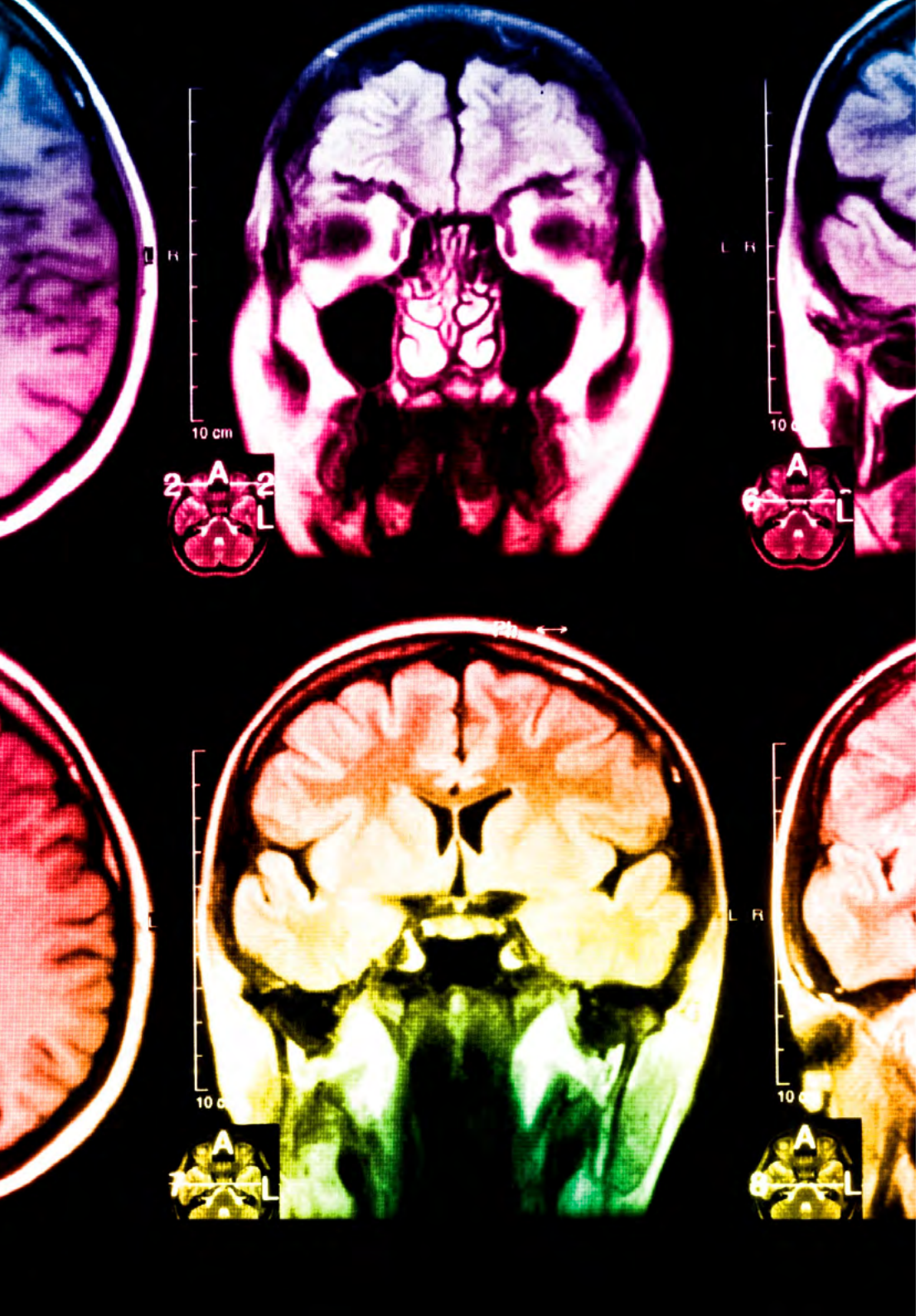
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better 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 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.

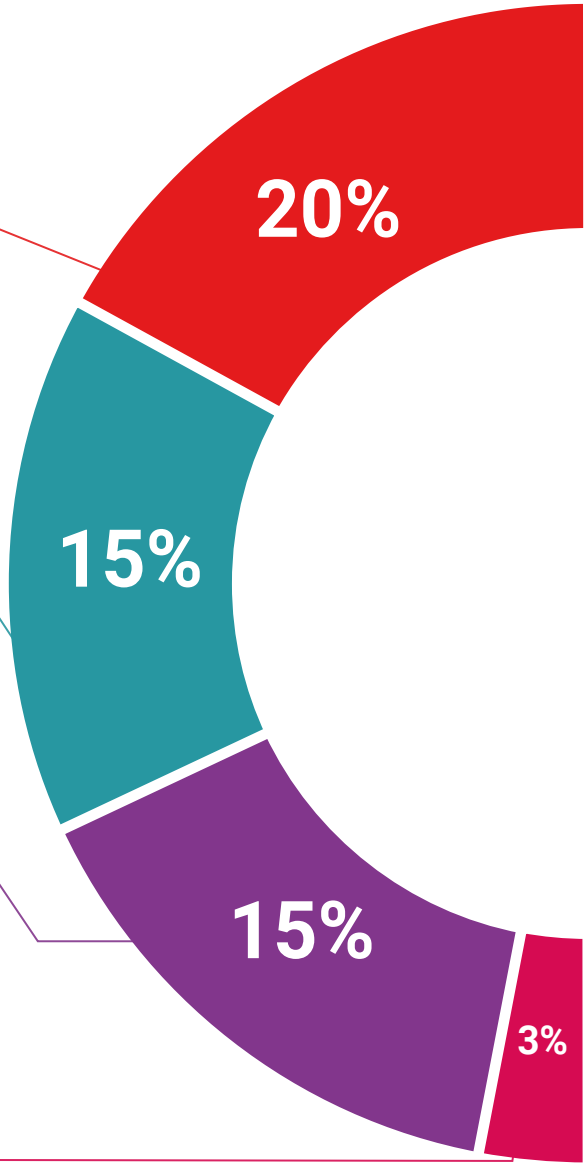
Interactive Summaries

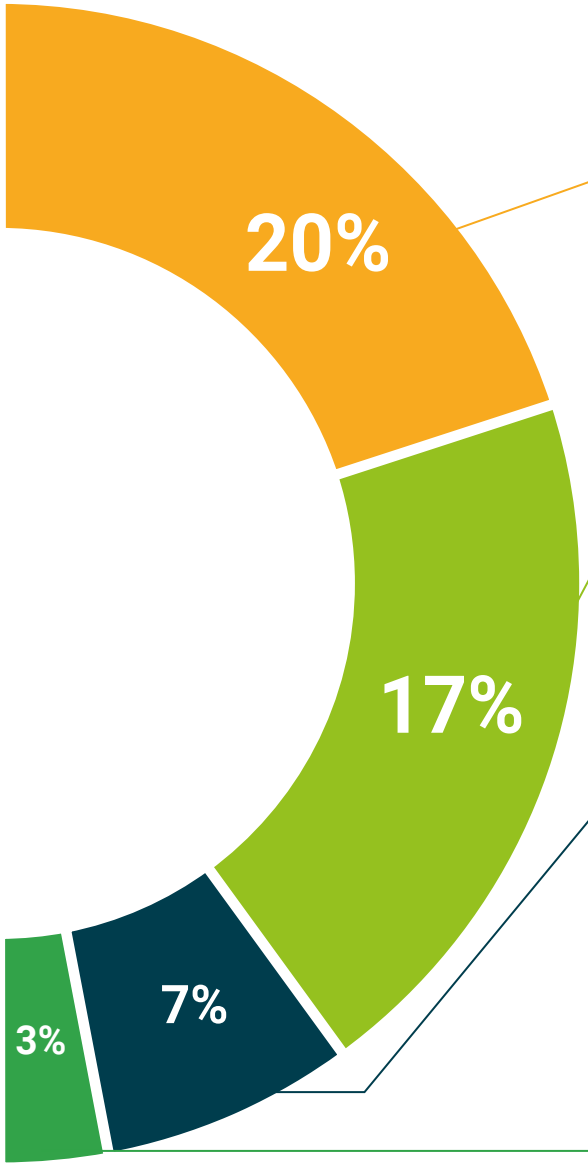
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive 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.





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 their goals.

Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as 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.

06

Certificate

The Postgraduate Certificate in Radiation Protection in Hospital Radioactive Facilities guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This **Postgraduate Certificate in Radiation Protection in Hospital Radioactive Facilities** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

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

Title: **Postgraduate Certificate in Radiation Protection in Hospital Radioactive Facilities**

Official Nº of Hours: **150 h.**


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Radiation Protection in Hospital Radioactive Facilities

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
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 EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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