Postgraduate Certificate

Radiophysics in Intraoperative Radiotherapy

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Postgraduate Certificate
Radiophysics in Intraoperative Radiotherapy

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

Website: **www.techtitute.com/in/nursing/postgraduate-certificate/radiophysics-intraoperative-radiotherapy**

Index

01

Introduction

Intraoperative Imaging Systems are very useful for performing different surgical procedures against cancer. This equipment helps to accurately visualize anatomical structures and areas of interest, allowing physicians to make informed decisions. In turn, nursing staff must be highly specialized to assist physicians during these interventions. Also, to collaborate in the monitoring of patients with tumors. To help update the skills of these professionals, TECH has designed a comprehensive program that addresses the features and functions of the most sophisticated equipment. In addition, the curriculum is supported by the innovative *Relearning* methodology designed to avoid unnecessary memorization and increase the effectiveness of the students during their studies.

To meet your goals of self-improvement and updating in the field of Radiophysics for Nursing, TECH provides you with an unparalleled 100% online methodology"

Interdisciplinary collaboration is a fundamental pillar during intraoperative radiation therapy, especially as it affects cancer patients. In order to carry out an adequate approach, collaboration between several healthcare professionals is needed to design highly personalized treatment plans. This collaboration ensures that factors such as the location, size and nature of the tumors are taken into account. In particular, nurses are some of the most important assets in the care and treatment process. In their hands are responsibilities such as patient monitoring, cures and direct and instrumental collaboration with physicians in the operating room.

In this context, TECH will delve into the multidisciplinary roles within the Intraoperative Radiotherapy teams through a comprehensive Postgraduate Certificate. Therefore, the curriculum will address the importance of communication between radiotherapists, surgeons, oncologists and nurses. Also, the syllabus will provide several practical examples, based on real case studies in simulated learning environments.
On the other hand, the didactic materials will emphasize the ethical considerations that must be taken into account in clinical decision making. In addition, it will provide guidelines for nursing staff to participate in therapeutic strategies in a more fluid and efficient way.

The program is based on the revolutionary *Relearning* method. This learning system consists in the reiteration of the most relevant contents, in such a way that they are recorded in the memory of the students in a progressive and natural way.
The program will also offer various clinical case studies, which will allow students to get closer to the reality of medical care. Along the same lines, students will have access at all times to a digital library full of audiovisual materials (explanatory videos, interactive summaries or infographics) and additional didactic materials such as complementary readings. In this way, students will consolidate their knowledge in a more dynamic way.

This **Postgraduate Certificate in Radiophysics in Intraoperative Radiotherapy** contains the most complete and up-to-date scientific program on the market. The most important features include:

- The development of case studies presented by experts in Radiophysics.
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- 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

You will hone your nursing skills from key knowledge on minimizing damage to surrounding healthy tissues during intraoperative radiation therapy"

You will address the most effective procedures for postoperative follow-up of patients from a nursing point of view with this university program"

You will execute the most advanced monitoring strategies for patients who have received intraoperative radiation doses in their treatments after this academic itinerary.

Through the analysis of real cases that you will develop in this program, you will master the most advanced Radiophysics techniques for Nursing.

The program's teaching staff includes professionals from the field who contribute their work experience to this educational 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

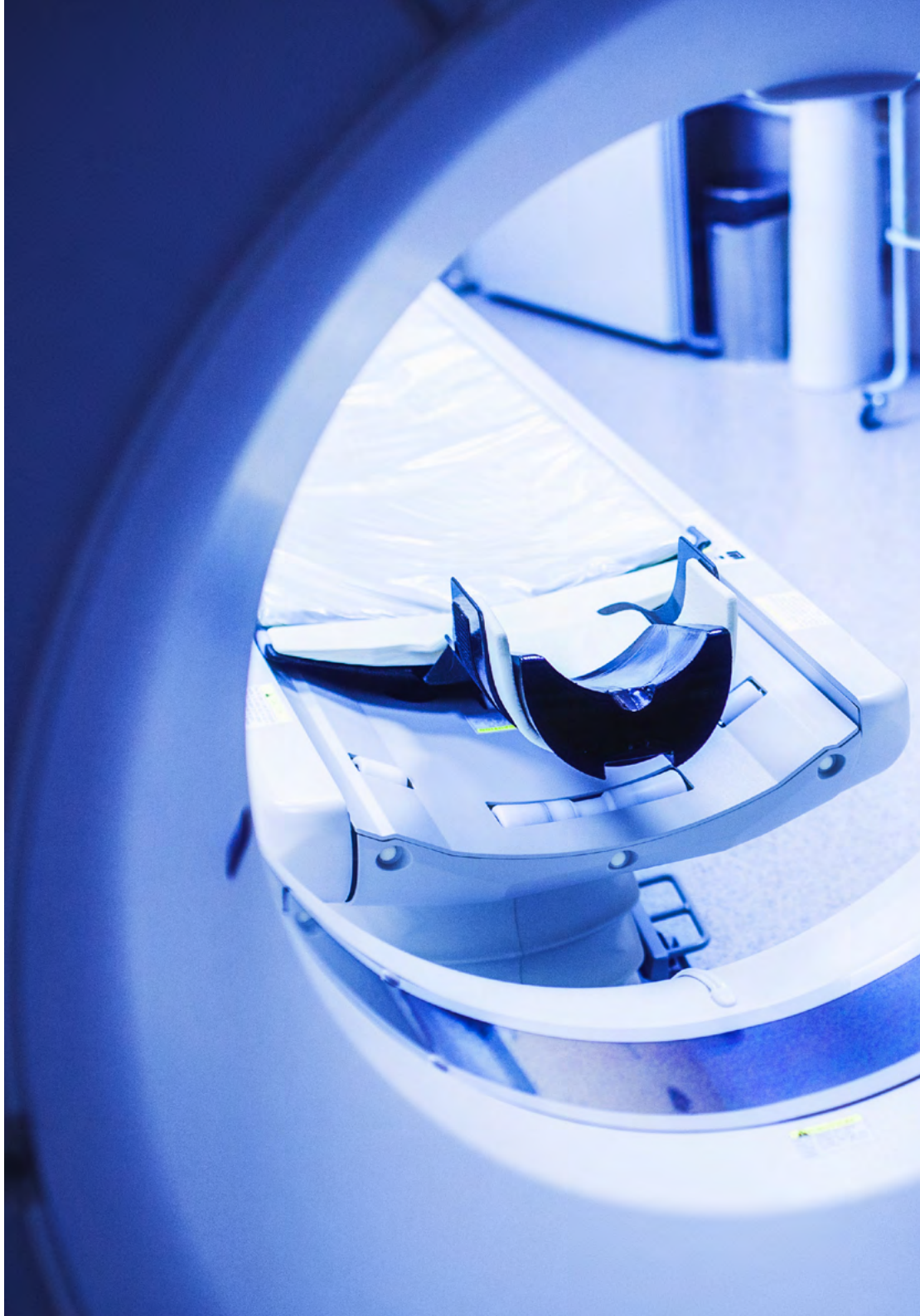
Objectives

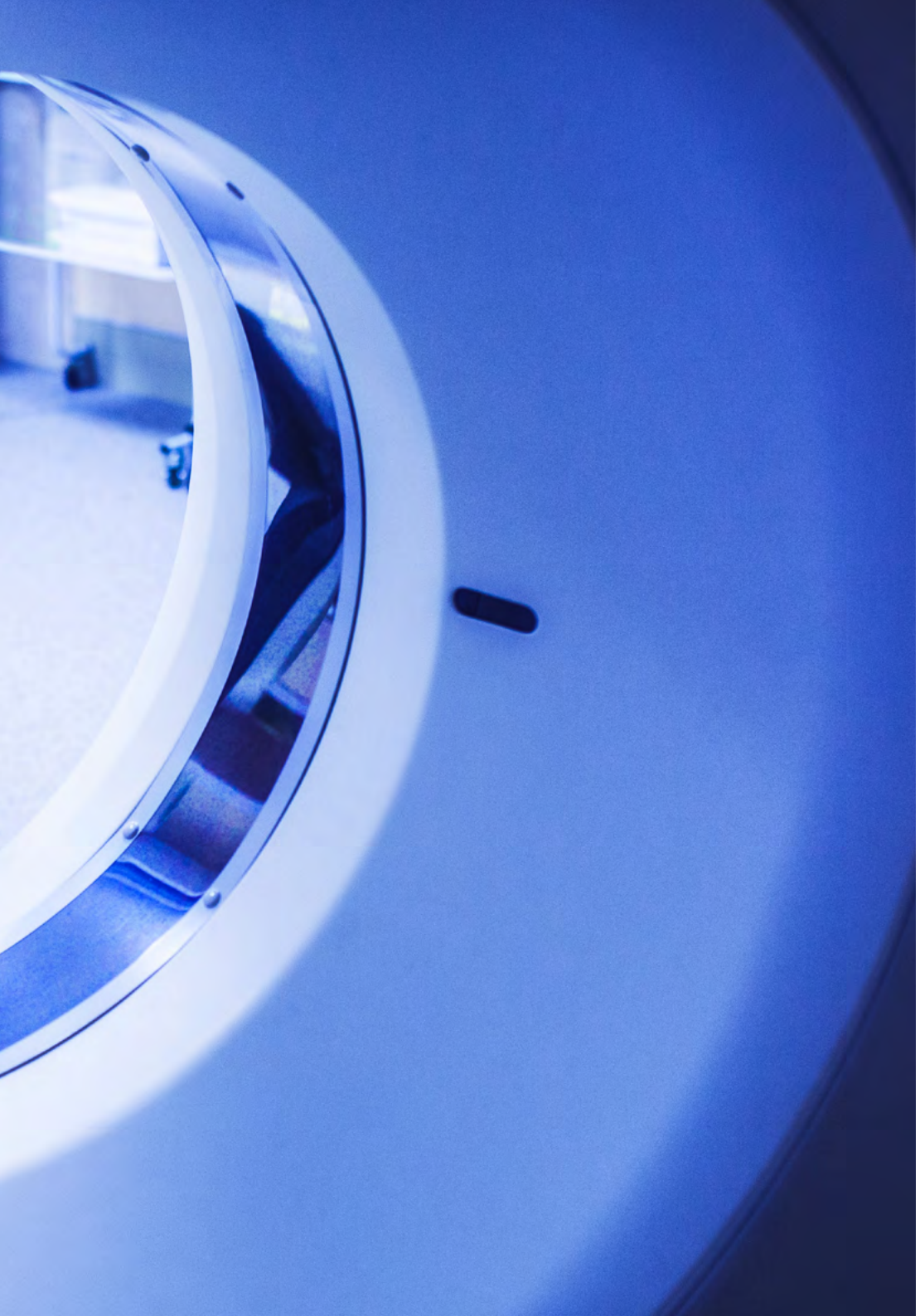
Through this university program, graduates will be able to fully interpret the essential clinical indications to effectively develop Intraoperative Radiotherapy treatments. In this way, nurses will implement a praxis of excellence based on the latest scientific evidence and the management of the functions of the most sophisticated Intraoperative Radiotherapy technologies. With these skills in their hands, they will apply various strategies to ensure radiological safety during procedures and will minimize exposure to harmful radiation doses among patients and healthcare personnel.

Do you want to become a nurse highly specialized in Intraoperative Radiation Therapy techniques? Do it with this 6-week program"

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

- Identify the main clinical indications for the application of intraoperative radiotherapy
- Analyze in detail the methods of dose calculation in intraoperative radiotherapy
- Examine the factors influencing patient and medical staff safety during intraoperative radiotherapy procedures

You will have access to all the contents of this program from any device with an Internet connection or you will be able to download it and consult it offline"

03

Course Management

TECH's university program is led by highly qualified and internationally recognized teachers in the field of Intraoperative Radiotherapy. The constant updating of the course syllabus guarantees quality knowledge and successful clinical practice for nurses interested in the area. Through mentoring by top professionals, specialists will be able to acquire practical knowledge and improve their professional performance. With the TECH program, nurses can update their skills and knowledge in this specialty in order to offer specialized care to their patients.

The diverse talents and skills of this cadre of faculty will provide you with the most up-to-date knowledge. Learn with the best!"

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)

04

Structure and Content

Through an innovative approach, this course will delve into Intraoperative Radiation Therapy, which involves the administration of radiation during surgeries. The curriculum will provide students with the state-of-the-art technology used in this technique, such as imaging systems or mobile linear accelerators. Along the same lines, the syllabus will delve into dose calculations and treatment planning, including key methodologies that will ensure maximum accuracy. Likewise, the program will offer the most advanced radiological protection measures in order to guarantee a safe working environment.

An intensive program that will allow you to advance quickly and efficiently in the acquisition of complex Radiophysics for Nursing skills"

Module 1. Advanced Radiotherapy Method. Intraoperative radiotherapy

1.1. Intraoperative radiotherapy
- 1.1.1. Intraoperative radiotherapy
- 1.1.2. Current Approach to Intraoperative Radiotherapy
- 1.1.3. Intraoperative Radiotherapy versus Conventional Radiotherapy

1.2. Technology in Intraoperative Radiotherapy
- 1.2.1. Mobile Linear Accelerators in Intraoperative Radiotherapy
- 1.2.2. Intraoperative Imaging Systems
- 1.2.3. Quality Control and Maintenance of Equipment

1.3. Treatment Planning Systems in Intraoperative Radiotherapy
- 1.3.1. Dose Calculation Methods
- 1.3.2. Volumetry and Delineation of Organs at Risk
- 1.3.3. Dose Optimization and Fractionation

1.4. Clinical Indications and Patient Selection for Intraoperative Radiotherapy
- 1.4.1. Types of Cancer Treated with Intraoperative Radiotherapy
- 1.4.2. Assessment of Patient Suitability
- 1.4.3. Clinical Studies and Discussion

1.5. Surgical Procedures in Intraoperative Radiotherapy
- 1.5.1. Surgical Preparation and Logistics
- 1.5.2. Radiation Administration Techniques During Surgery
- 1.5.3. Postoperative Follow-up and Patient Care

1.6. Calculation and Administration of Radiation Dose for Intraoperative Radiotherapy
- 1.6.1. Formulas and Dosis Calculation Algorithms
- 1.6.2. Dose Correction and Adjustment Factors
- 1.6.3. Real-time Monitoring during Surgery

1.7. Radiation Protection and Safety in Intraoperative Radiotherapy
- 1.7.1. International Radiation Protection Standards and Regulations
- 1.7.2. Safety Measures for the Medical Staff and the Patient
- 1.7.3. Risk Mitigation Strategies

1.8. Interdisciplinary Collaboration in Intraoperative Radiotherapy
- 1.8.1. Role of the Multidisciplinary Team in Intraoperative Radiotherapy
- 1.8.2. Communication between Radiation Therapists, Surgeons and Oncologists
- 1.8.3. Practical Examples of Interdisciplinary Collaboration

1.9. *Flash* Technique. Latest Trend in Intraoperative Radiotherapy
- 1.9.1. Research and Development in Intraoperative Radiotherapy
- 1.9.2. New Technologies and Emerging Therapies in Intraoperative Radiotherapy
- 1.9.3. Implications for Future Clinical Practice

1.10. Ethics and Social Aspects in Intraoperative Radiotherapy
- 1.10.1. Ethical Considerations in Clinical Decision-Making
- 1.10.2. Access to Intraoperative Radiotherapy and Equity of Care
- 1.10.3. Communication with Patients and Family in Complex Situations

Enroll now in this 100% online Postgraduate Certificate where you will have innovative study materials in multimedia format"

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 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:

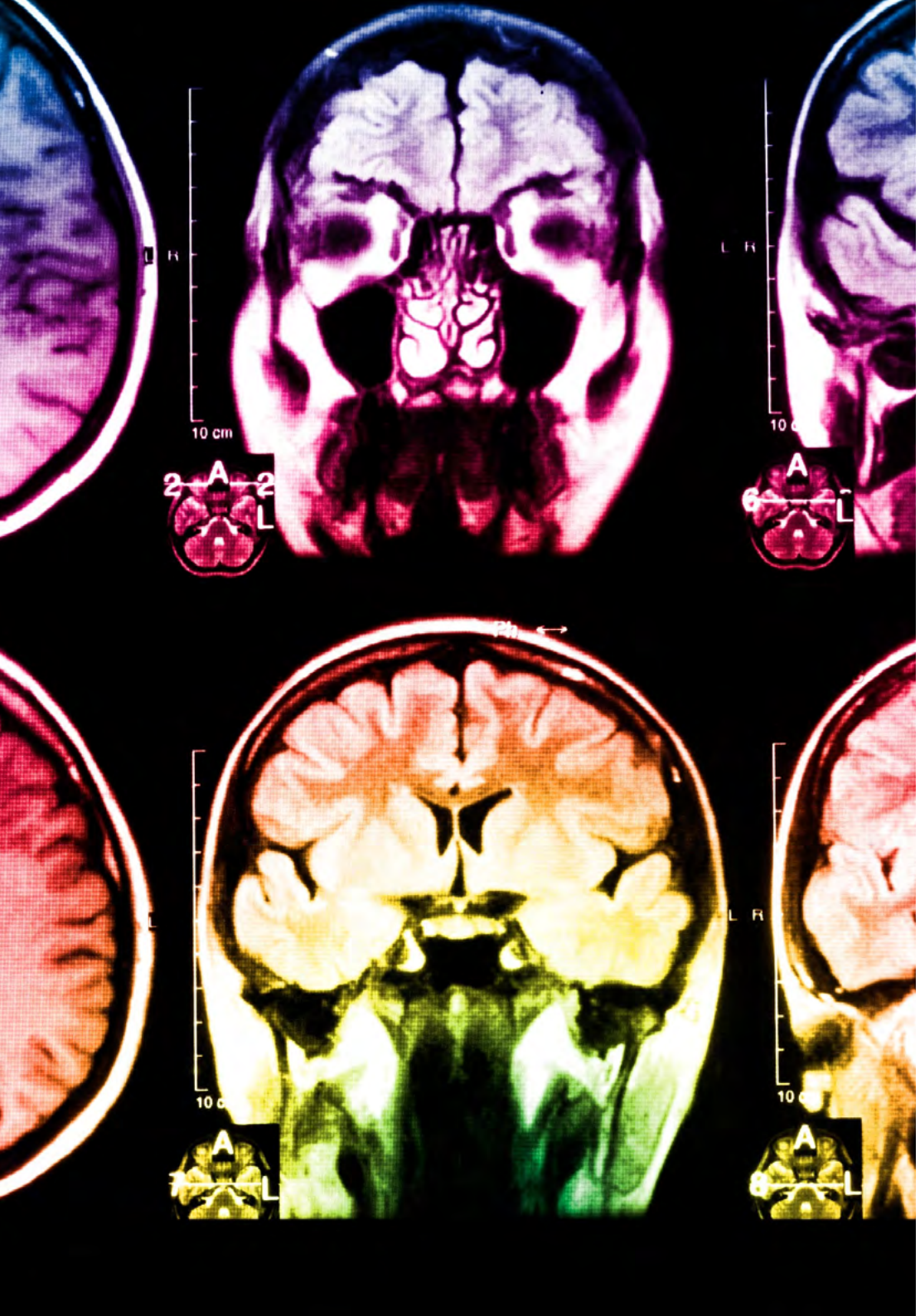
1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into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



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.

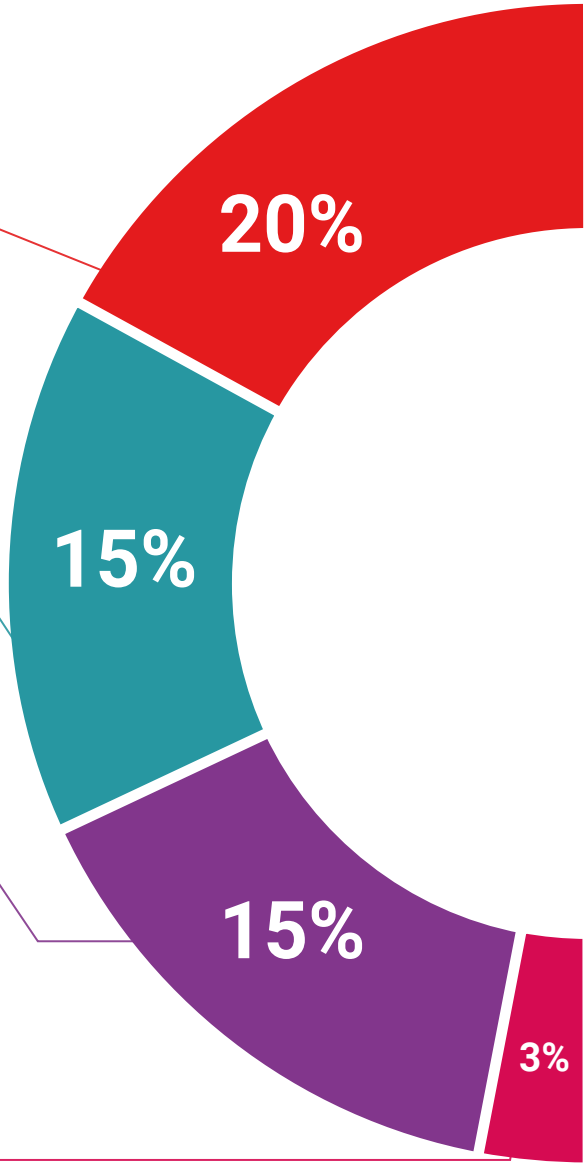
Interactive Summaries

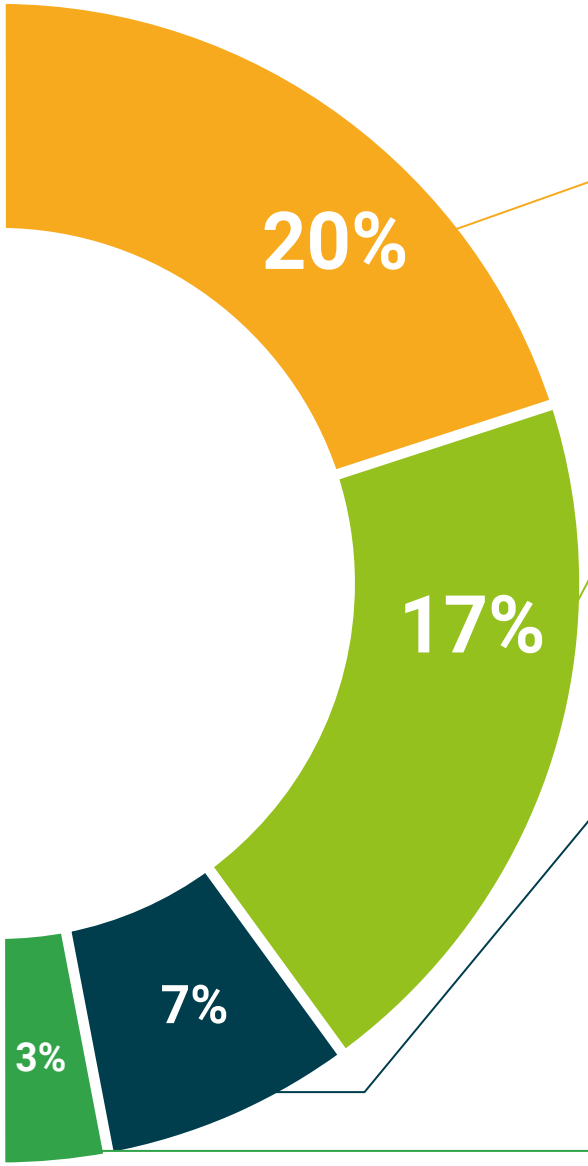
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.





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 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.

06

Certificate

The Postgraduate Certificate in Radiophysics in Intraoperative Radiotherapy 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 Radiophysics in Intraoperative Radiotherapy** contains the most complete and up-to-date scientific 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 certificate 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 Radiophysics in Intraoperative Radiotherapy**

Official Nº of Hours: **150 h.**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Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Radiophysics in Intraoperative Radiotherapy

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 certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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