# Postgraduate Diploma

## Image-Guided Medical Intervention

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# Postgraduate Diploma

## Image-Guided Medical Intervention

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

Website: **www.techtitute.com/pk/medicine/postgraduate-diploma/postgraduate-diploma-image-guided-medical-intervention**

# Index

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# Introduction

Image-Guided Medical Intervention continues to be of increasing relevance in medicine today. Percutaneous treatments have evolved rapidly in recent years due to the development of new techniques and bioengineering. The knowledge of these new materials, techniques, indications and their implementation in the medical process, make it essential for the interventional radiologist to be constantly updated.

*The new scenarios in current Radiology push us to propose new specialization programs that meet the real needs of experienced professionals, so that they can incorporate the advances in Image Guided Medical Intervention"*

Medical radiology is of crucial importance in the patient's diagnostic process, but it is increasingly acquiring a leading role in therapeutic interventions that until now have been performed in the dark or by approaching the patient in a much more aggressive way. The latest technological advances that are taking place allow the use of new image-guided systems such as multimodality fusion or the implementation of new therapeutic strategies, such as the administration of drug-loaded particles or oncolytic virus therapy.

This program includes some of the most important areas of interventional radiology, including basic aspects of clinical practice such as management or implementation of the consultation. It addresses processes and areas of knowledge where Image Guided Therapy plays a fundamental role such as neurology, thorax or musculoskeletal. It also includes the main emerging therapies in different areas and the future lines of Image Guided Therapy.

A complete and modern updating program, based on the latest advances in interventional radiology, developed through the latest educational technology, to update the professional and improve patient care.

This **Postgraduate Diploma in Image-Guided Medical Intervention** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Clinical cases presented by specialists in Radiology and other specialties
- The graphic, schematic, and practical contents with which they are created, provide scientific and health care training on those medical disciplines that are essential to professional practice
- Real high-resolution images of pathologies, diagnostic imaging tests and guided procedures
- Presentation of practical workshops on procedures and techniques
- An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- Action protocols with the most important advances in the specialty
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- With a special emphasis on evidence-based medicine and research methodologies in Radiology
- Content that is accessible from any fixed or portable device with an Internet connection

*You will be able to learn, through the latest educational technology, the latest advances in image-guided techniques"*

*This Postgraduate Diploma is the best investment you can make when selecting a refresher program, for two reasons: in addition to updating your knowledge in Image-Guided Medical Intervention you will obtain a qualification from TECH Technological University"*

*Incorporate the latest developments in Image-Guided Medical Intervention to your medical practice and improve patient prognosis.*

*It includes clinical cases and real images in high definition to bring clinical practice as close as possible to the development of the program.*

The teaching staff includes a team of leading Radiologists who bring their professional experience to this program, in addition to renowned specialists in other medical areas.

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

This program is focused on Problem-Based Learning, whereby the Students must try to solve the different professional practice situations that arise during this training. This will be done with the help of an innovative interactive video system created by renowned experts in the field of Radiology with extensive teaching experience.

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# Objectives

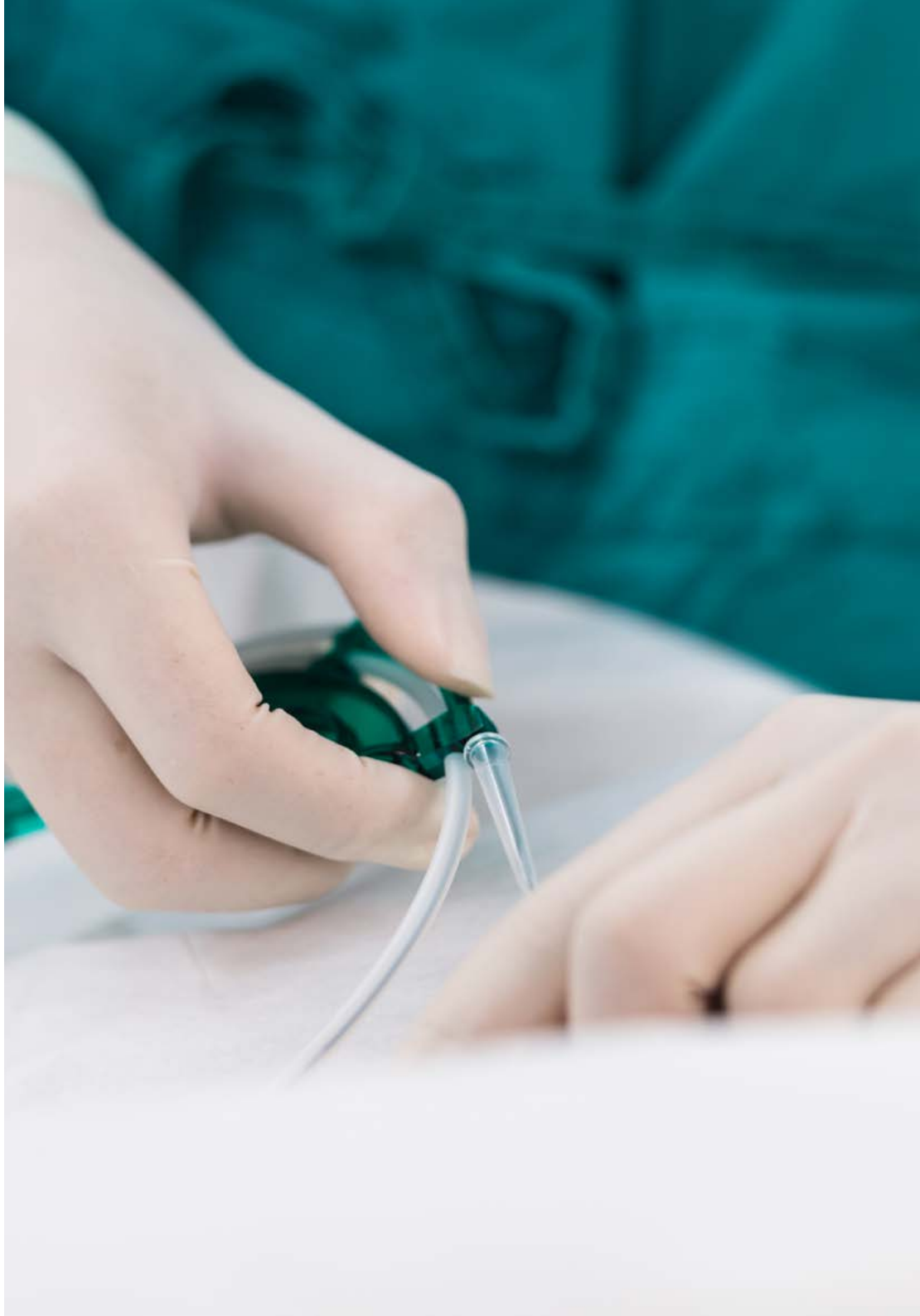
The main objective is to facilitate the incorporation of advances in anesthesia in critical patients, so that specialists can update their knowledge in a practical way, using the latest educational technology and adapting the educational process to their real needs.

*This refresher program will generate a sense of confidence in decision making during image-guided interventions, and help you grow professionally"*

## General Objective

- Update specialists on the procedures and techniques performed in anesthesia for pediatric and new image-guided, incorporating the latest advances to increase the quality of their daily medical practice and improve patient prognosis

*A path to achieve education and professional growth that will propel you towards a greater level of competitiveness in the employment market"*



## Specific Objectives

### Module 1. Management and Organization in Image-Guided Therapy

- Describe the importance of informed consent in Interventional Radiology
- Understand in depth the operation of the outpatient department and the Interventional Radiology department
- Know how to apply the different types of anesthesia in Interventional Radiology: local, sedation, analgesia and nerve blocks

### Module 2. Basis of Intervention Procedures

- Describe the techniques for therapeutic neurointerventionism, their indications, alternatives, and medical management
- Address the treatment of cerebral vasospasm, ischemic stroke and intracerebral AVMs
- Identify the spinal vascular malformations

### Module 3. Materials in Interventional Techniques

- Know the most commonly used materials in neurointerventionism
- Know and identify vascular, oncologic, musculoskeletal, drainage and non-vascular interventional materials, as well as materials for drainage and non-vascular interventions

### Module 4. Diagnostic Punctures

- Systematize the technique of joint puncture for arthrography
- Compare and evaluate the basic techniques of puncture biopsy and puncture drainage in interventional Radiology

### Module 5. Diagnostic Neurointerventionism

- Review the latest endovascular techniques for the treatment of cerebral aneurysms
- Describe the treatment of neurointerventional emergencies (epistaxis and hemorrhages in the otorhinolaryngological area)
- Gain up-to-date knowledge on the diagnostic and therapeutic algorithm for dural fistulas and intracerebral arteriovenous malformations

### Module 6. Therapeutic Neurointerventionism

- Identify and indicate the treatment of ischemic stroke using endovascular salvage techniques, angioplasty and *stent*placement
- Gain up-to-date knowledge of invasive diagnostic procedures by intracerebral and spinal arterial catheterization, as well as venous sampling techniques and intracerebral pharmacological provocation
- Recognize pre-surgical tumor embolization techniques in neuroradiology

### Module 7. Musculoskeletal Interventionism

- Analyze trauma and degenerative pathology of the wrist with radiological techniques
- Diagnose pelvic injuries with MRI
- Recognize the different types of meniscus tears with MRI
- Identify the normal anatomy and the semiology of knee ligament injuries
- Evaluate cartilaginous lesions of the knee and arthropathies
- Analyze post-traumatic lesions of the ankle with imaging techniques
- Use ultrasound and MRI to recognize sporting muscle injuries
- Analyze the technique and indications of dual-energy CT

### Module 8. Urologic Interventionism

- Describe the techniques of urologic interventionism, its indications, alternatives and medical management
- Systematize the reading and radiological evaluation of peritoneal carcinomatosis
- Recognize the advances in assessing the response to treatment with imaging diagnostic techniques in rectal cancer
- Evaluate the technique, indications and semiology of virtual colonoscopy with CT
- Analyze the findings of radiological techniques in pelvic floor pathology
- Recognize radiological surgery of urologic neoplasms
- Systematize the reading and radiologic report of prostate cancer with PI-RADS

### Module 9. Thoracic Interventionism

- Describe the radiological semiology of thoracic vascular pathology
- Evaluate the anatomy and cardiac pathology with CT and MRI
- Recognise the latest advances in a cardiac CT and cardiac MRI
- Revise the technological advances in image biomarkers
- Evaluate the methodology of multiparametric studies in Radiology

### Module 10. Puncture Drainage

- Identify the indications for biliary and abscess drainage, its approaches and technique
- Provide basic and advanced knowledge for the proper development of biopsy puncture techniques in the different visceral territories using imaging methods

### Module 11. Ablative techniques

- Describe the ablative techniques, their indications, alternatives, and medical management
- Correctly apply the different ablative techniques used in image-guided therapy in oncology

### Module 12. Other Aspects of Interest in Interventional Radiology

- Describe current techniques and protocols for foreign body removal
- Understand multimodality fusion
- Apply nanoparticles to the future of interventional Radiology

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# Structure and Content

The structure of the syllabus has been designed by a team of professionals knowledgeable about the implications of medical specialization in the approach to the diagnostic process, aware of the relevance of current specialization and committed to quality teaching through new educational technologies.

*This Postgraduate Diploma in Image-Guided Medical Intervention contains the most complete and up-to-date scientific program on the market"*

## **Module 1.** Management and Organization in Image-Guided Therapy

1.1. Informed Consent in Interventional Radiology
1.2. The Outpatient Clinic and the Interventional Radiology Department
1.3. Anesthesia in Interventional Radiology
1.4. Medical Management Protocols in General and Interventional Radiology
1.5. Medication Used in Neurointerventionism
1.6. Medication Used in Vascular and Non-Vascular Interventionism
1.7. Management in Interventional Radiology: URV, DRM, Indicators
1.8. Intervention Rooms

## **Module 2.** Basis of Intervention Procedures

2.1. Radiological Protection in Interventional Procedures
2.2. Arterial and Venous Puncture for Interventional Access: Seldinger and Trocar Technique
2.3. Ultrasound Puncture for Vascular Access
2.4. Compression of Puncture Sites and Care

## **Module 3.** Materials in Interventional Techniques

3.1. Materials in Neurointerventionism
3.2. Materials in Vascular Interventional Techniques
3.3. Materials in Oncologic Interventional Techniques
3.4. Materials in Musculoskeletal Interventional Techniques
3.5. Materials for Drainages and Non-Vascular

## **Module 4.** Diagnostic Punctures

4.1. Image-Guided Percutaneous Biopsy. FNA
4.2. Renal Biopsy
4.3. Hepatic biopsy
4.4. Pulmonary Biopsy
4.5. CT- Guided Biopsy

## **Module 5.** Diagnostic Neurointerventionism

5.1. Cerebral Arteriography
5.2. Spinal Arteriography
5.3. Petrosal Sinus Sampling
5.4. Wada Test

## **Module 6.** Therapeutic Neurointerventionism

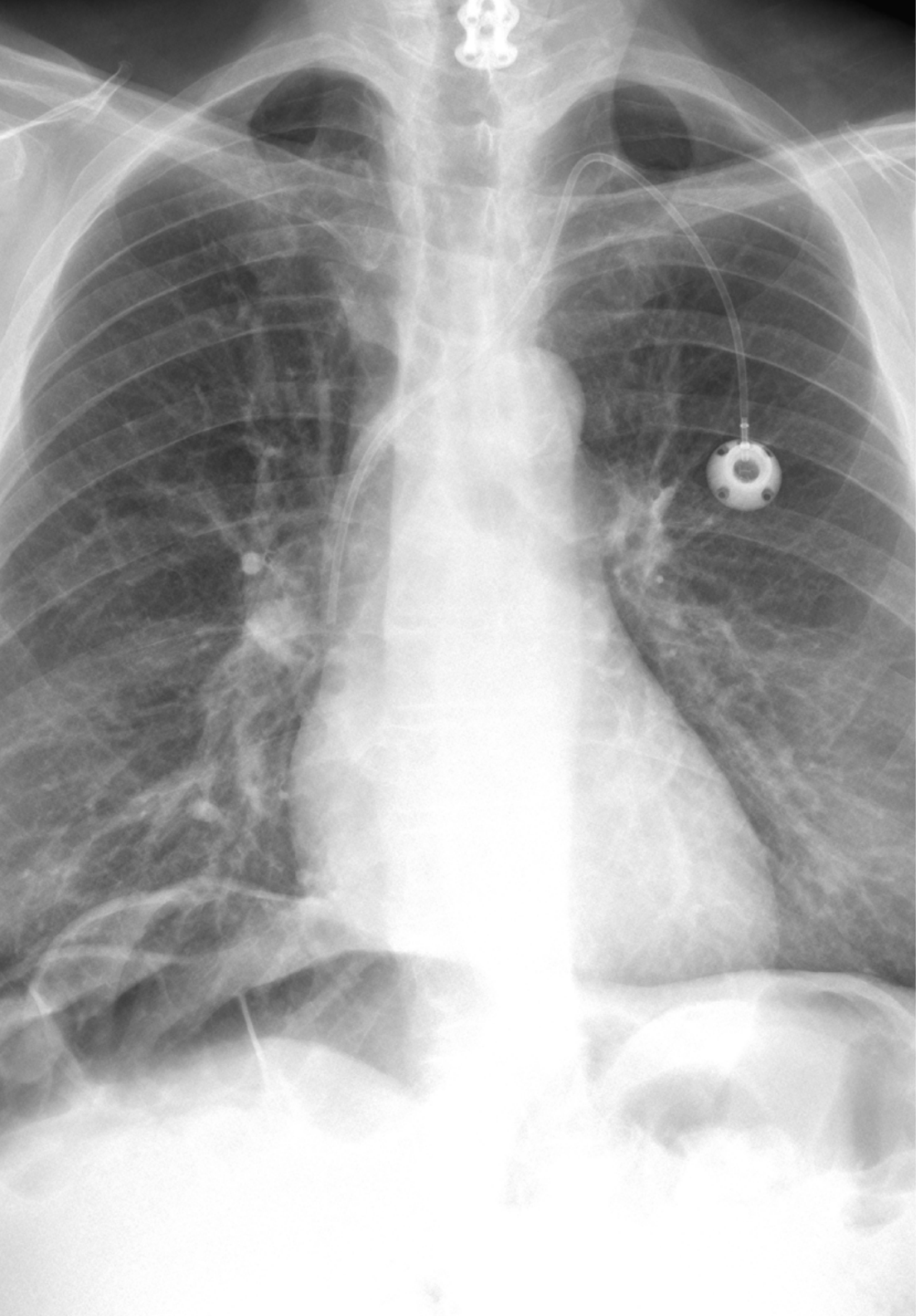
6.1. Embolization of Cerebral Aneurysms
6.2. Treatment of Cerebral Vasospasm
6.3. Carotid*Stent,* Vertebral *Stent* and Cerebral Stent
6.4. Endovascular Treatment of an Ischemic Stroke
6.5. Embolization in Epistaxis
6.6. Embolization of Cerebral Meningiomas and Paragangliomas
6.7. Treatment of Intracerebral AVMs
6.8. Dural Fistulas, Diagnosis and Treatment
6.9. Spinal Vascular Malformations

## **Module 7.** Musculoskeletal Interventionism

7.1. Discography
7.2. Vertebroplasty, Vesselplasty and Kyphoplasty
7.3. Infiltration and Facet Rhizolysis
7.4. Percutaneous Discectomy
7.5. Epidurolisis and Pain Management
7.6. Percutaneous Ganglionic Block for Pain
7.7. Joint Infiltrations

## **Module 8.** Urologic Interventionism

8.1. Percutaneous Nephrostomy
8.2. Anterograde Double J
8.3. Retrograde Double J and Endourological Interventionism
8.4. Ureteral and Urethral Endoprosthesis





**Module 9.** Thoracic Interventionism

9.1. Thoracentesis, Thoracic Drainage and Associated Techniques
9.2. Drainage of Thoracic Abscesses

**Module 10.** Puncture Drainage

10.1. Biliary Drainage
10.2. Drainage of Abscesses. Approaches and Technique
10.3. Percutaneous Gastrostomy and Gastrojejunostomy
10.4. Percutaneous Cholecystostomy

**Module 11.** Ablative techniques

11.1. Tumor Ablation with Radiofrequency and Microwaves
11.2. Tumor Cryoablation. Irreversible Electroporation

**Module 12.** Other Aspects of Interest in Interventional Radiology.

12.1. Extraction of Foreign Bodies
12.2. Multimodality Fusion
12.3. Nanoparticles. Future of Interventional Radiology

*Take the step to get up to date on the latest developments in Image-Guided Medical Intervention"*

04

# Methodology

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

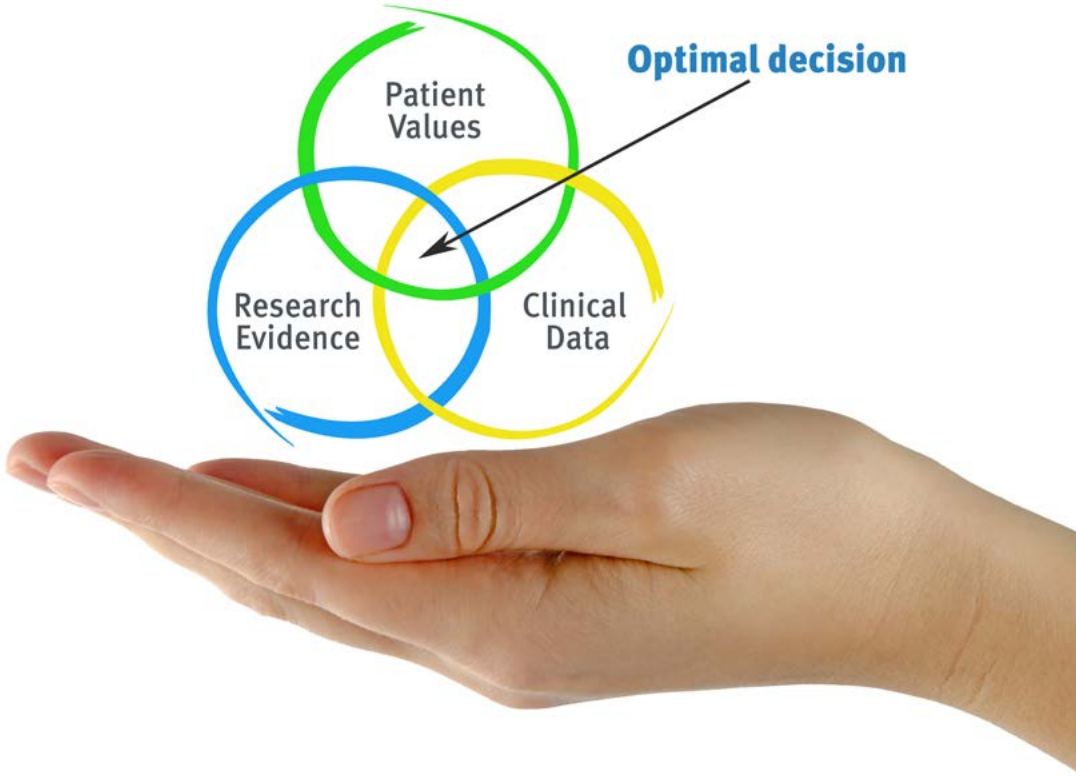
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

*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:**

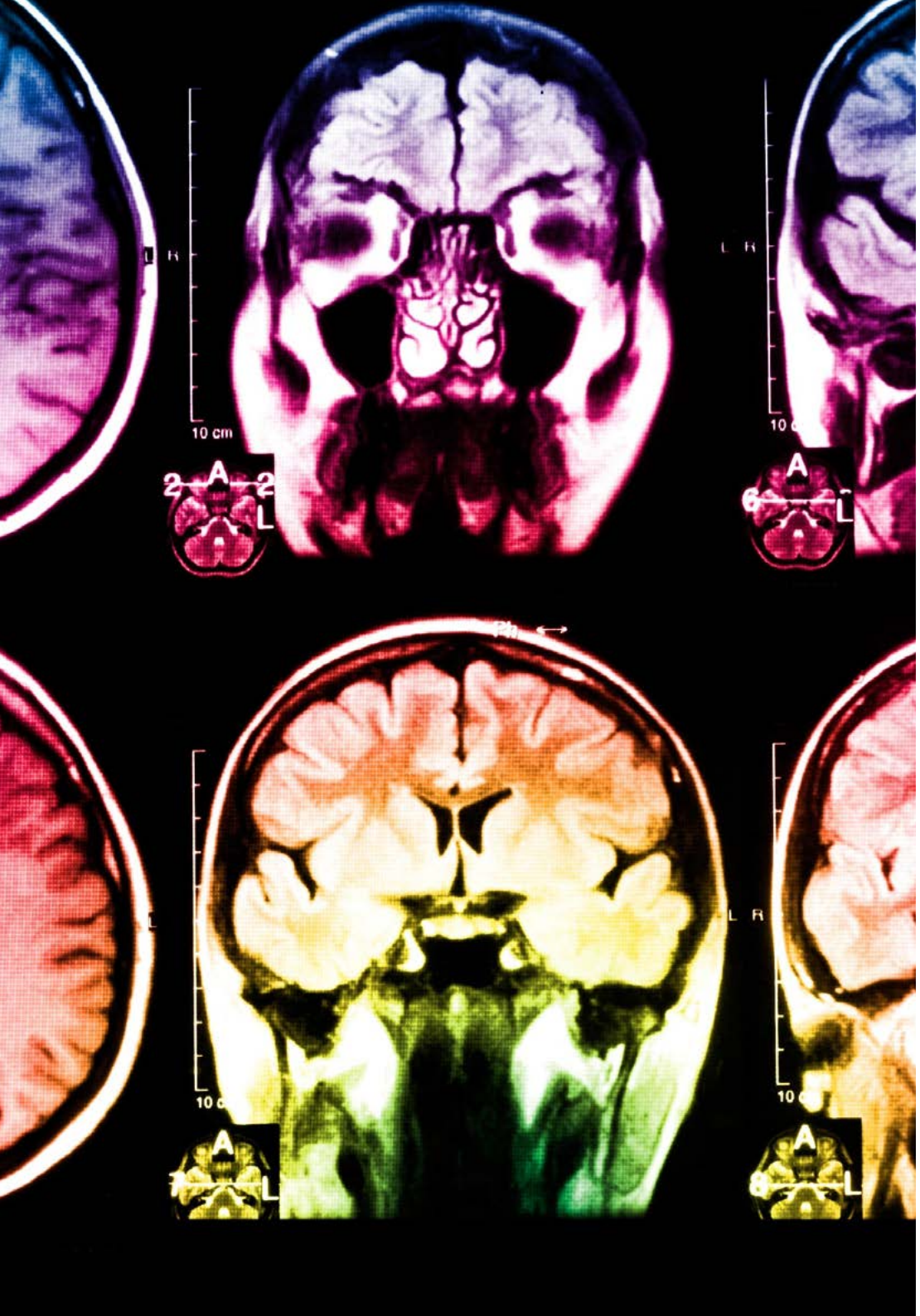
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better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

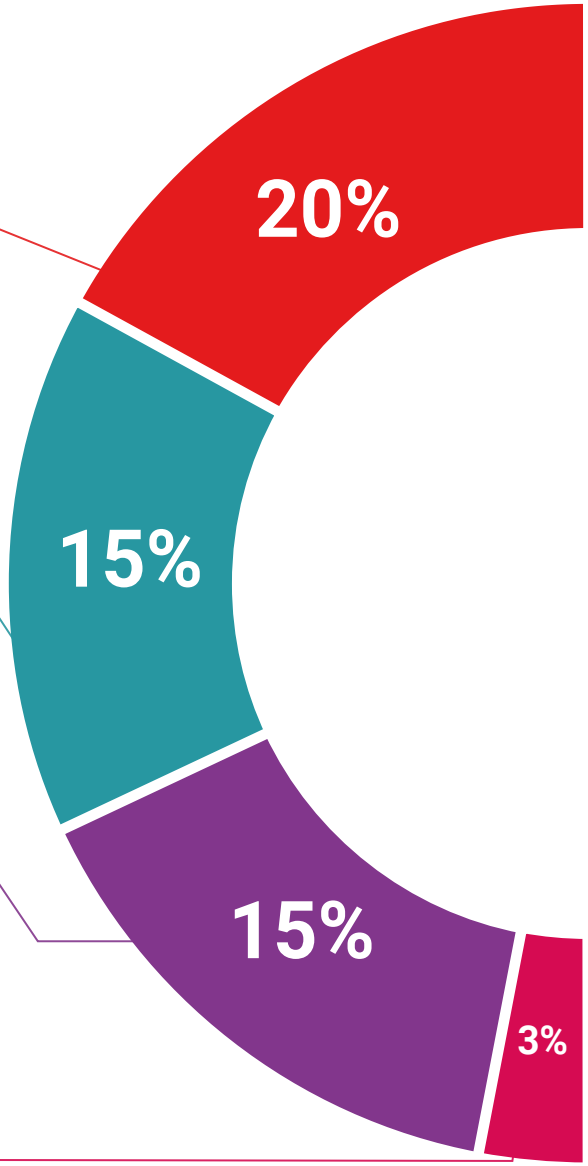
### Interactive Summaries

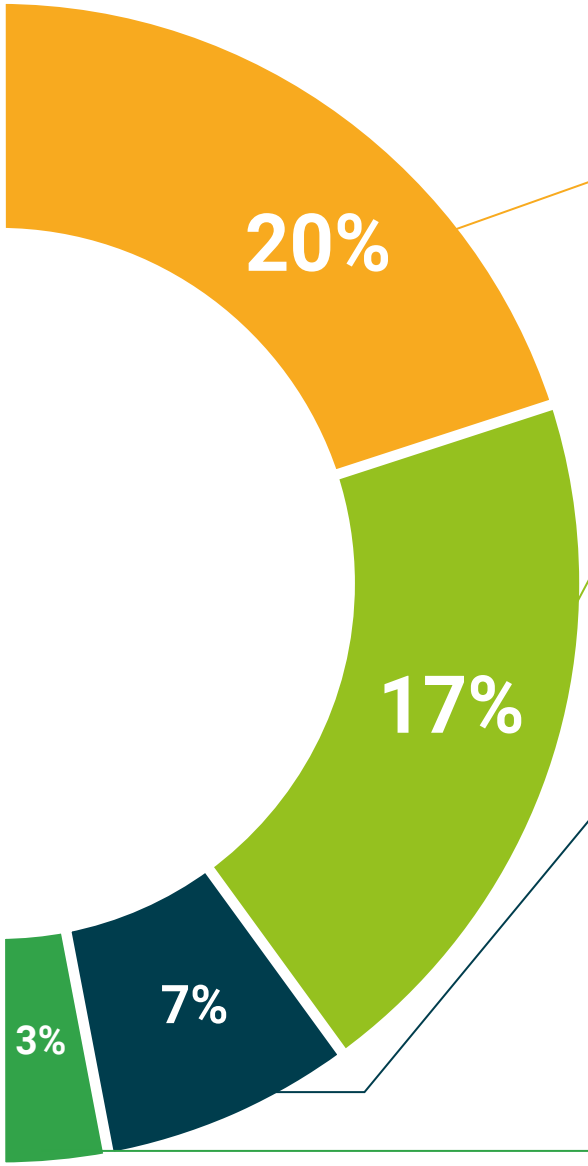
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.

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# Certificate

The Postgraduate Diploma in Image-Guided Medical Intervention guarantees students, in addition to the most rigorous and up-to-date education, access to a qualification 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 Diploma in Image-Guided Medical Intervention** 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 Diploma** issued by **TECH Technological University** via tracked delivery*.

The certificate 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 Image-Guided Medical Intervention**

Official No. of Hours: **600 h.**


tech technological university

Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Image-Guided Medical Intervention

This is a qualification awarded by this University, equivalent to 600 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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