

# Postgraduate Certificate

Radiology, Complications, Rehabilitation  
in Trauma in the ICU





## Postgraduate Certificate Radiology, Complications, Rehabilitation in Trauma in the ICU

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-certificate/radiology-complications-rehabilitation-trauma-icu](http://www.techtute.com/us/medicine/postgraduate-certificate/radiology-complications-rehabilitation-trauma-icu)

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# 01

# Introduction

Traumatic Disease is the leading cause of mortality under 40 years of age, as well as of disability and sequelae, many of them preventable. In this context, Radiology stands as an elementary tool for the accurate assessment of the injuries suffered, allowing health professionals to diagnose and understand the extent of internal damage. With the aim of providing the specialist with a comprehensive update in this field, TECH offers a comprehensive academic program that guarantees the mastery of the latest trends in Radiology, Complications, Rehabilitation in Trauma in the ICU. This program, taught by an outstanding professors, is presented entirely online, using an innovative learning methodology known as *Relearning*.



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*Choose TECH! You will renew your skills in Radiology, Complications, Rehabilitation in Trauma in the ICU in an agile and simple way"*



In the context of ICU Trauma, Radiology is presented as a valuable tool, not only for clinical decision making, but also for the rehabilitation process in the ICU. The combined interpretation of radiological findings and clinical information allows a complete understanding of the patient's situation, thus facilitating the planning of the most effective therapeutic strategies.

The Postgraduate Certificate will address the advanced use of diagnostic imaging techniques for patients with traumatic injuries, within the Intensive Care Units (ICU). The professional will update their skills in the interpretation of X-rays, CT scans and MRIs to assess tissue and organ damage. In addition, they will learn specific imaging protocols to identify fractures, internal injuries and other serious conditions.

The program will also cover collaboration between medical teams to guide treatment decisions and prioritize care. In this way, the graduate will acquire advanced skills in radiological interpretation and its application in the management of trauma patients. Without overlooking the discussion of ethical and safety implications in the use of radiation.

Of particular note is the *Eco-fast* technique, a type of ultrasound that has proven to be useful for the detection of bleeding in the thorax and abdomen, as well as cardiac tamponade in patients with penetrating thoracic trauma. Therefore, it has become a very effective tool for making therapeutic decisions regarding trauma injuries.

In this way, this academic program will provide the student with a solid theoretical basis, together with the necessary training to apply it in critical real-world situations. The best academic results are guaranteed thanks to the leadership of a distinguished faculty, formed by experts in Intensive Care Medicine. TECH provides exclusive access to the most advanced learning methodology: *Relearning*, consisting of the repetition of key concepts, facilitating an effective assimilation of knowledge.

This **Postgraduate Certificate in Radiology, Complications, Rehabilitation in Trauma in the ICU** contains the most complete and up-to-date scientific program on the market.

The most important features include:

- ♦ The development of practical cases presented by experts in Radiology, Complications, Rehabilitation in Trauma in the ICU
- ♦ 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



*Enroll now and enjoy all the benefits of a 100% online program, which you can study from home without pressure and without schedules, at your own pace"*

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*You will analyze the operation of the hybrid operating room, which allows you to obtain high quality images during surgery. Get to the forefront with TECH!"*

The program's teaching team 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.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an 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.

*You will cover the Shock Protocol, which will allow you to assess the severity criteria in trauma patients with signs of shock.*

*You will delve into Eco-fast, the latest in ultrasound scans to detect bleeding in the chest and abdomen, thanks to the most innovative multimedia content.*



# 02

# Objectives

This Postgraduate Certificate is presented as an exceptional opportunity to excel in a field of vital importance for the health and well-being of critically ill patients. Therefore, the specialist will be immersed in a dynamic learning environment, combining theory with the Case Method, used by Harvard University itself, which consists of the practical analysis of real medical cases. In addition, they will have access to the experience of a recognized teaching team, experts in the field of Radiology and Trauma Rehabilitation.







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*You will up-date your career path with this Postgraduate Certificate in Radiology, Complications, Rehabilitation in Trauma in the ICU. And in only 6 weeks!”*



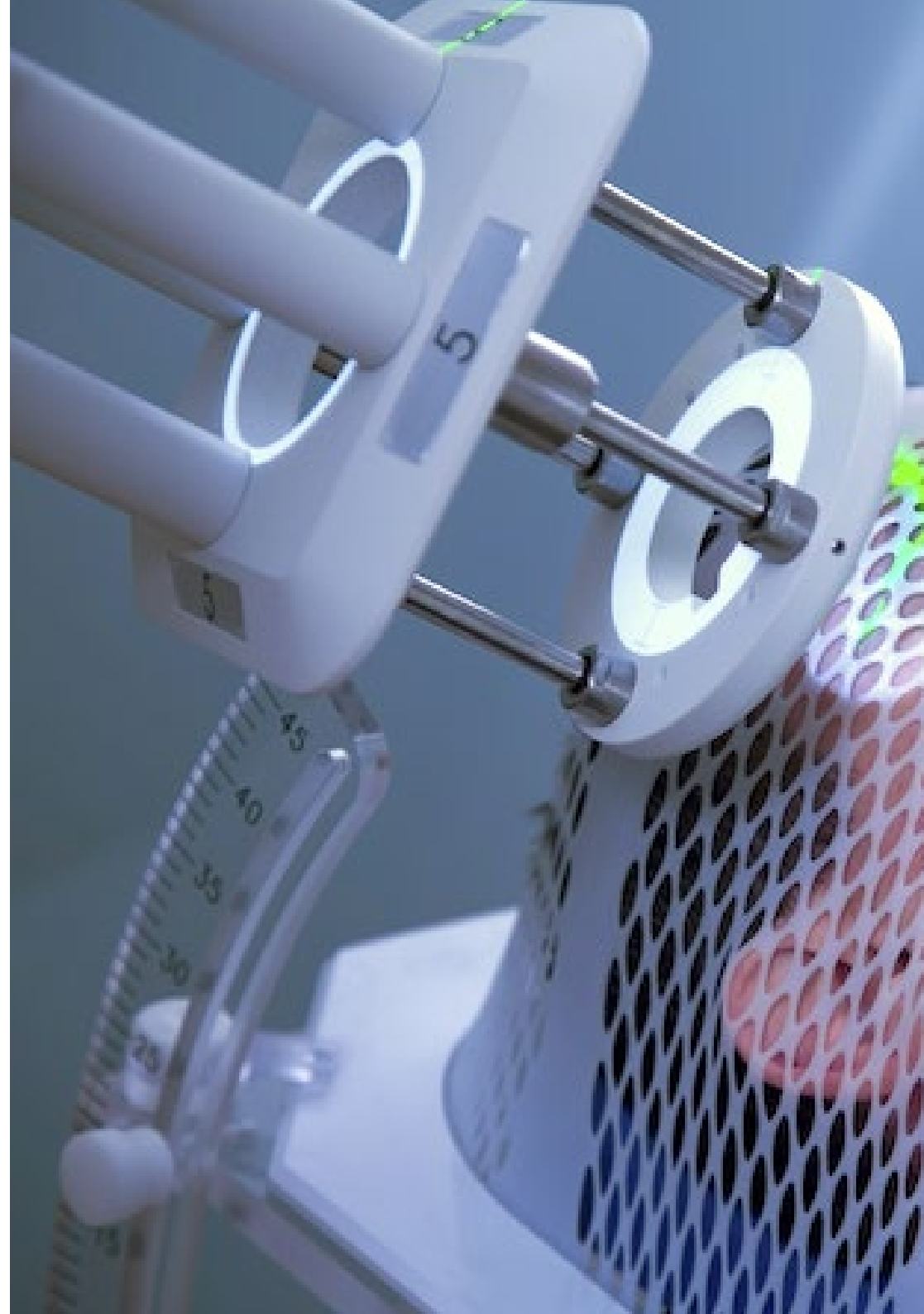
## General Objectives

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- Delve into a thorough understanding of the anatomophysiological, pathophysiological, and clinical basis of severe traumatic injuries, as well as associated complications and comorbidities
- Effectively communicate injury prevention information to different audiences and utilize health promotion strategies
- Delve into protocols for the prehospital management of specific trauma, such as head, chest, and orthopedic trauma
- Integrate quality and safety practices in the management of trauma patients, minimizing risks and optimizing outcomes
- Implement triage protocols in mass trauma situations and prioritize care



*You will master image interpretation, from conventional radiographs to more advanced tools, such as magnetic resonance imaging and computed tomography"*





## Specific Objectives

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- Delve into the interpretation of radiographs, computed tomography and magnetic resonance imaging to identify traumatic injuries
- Differentiate between acute injuries and pre-existing conditions on radiologic images of trauma patients
- Describe traumatic injuries in areas such as the musculoskeletal system, internal organs, and soft tissues
- Delve into the technologies and equipment used in medical imaging and understand how they influence diagnosis
- Delve into the role of the radiologist and develop skills in communicating radiologic findings to the health care team
- Delve into radiologic findings to make informed clinical decisions about the management and treatment of trauma patients

# 03

# Course Management

The teaching team behind the Postgraduate Certificate in Radiology, Complications, Rehabilitation in Trauma in the ICU is composed of experts in Intensive Care Medicine committed to academic excellence. Each specialist has a wealth of experience in this field, coming from renowned clinical environments. In this way, the graduate will have at their disposal all the facilities to become a highly trained health professional under the tutelage of a leading team in diagnostic imaging and therapeutic rehabilitation, ensuring a complete and balanced acquisition of knowledge.







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*You will be immersed in an educational environment led by an elite faculty in Intensive Care Medicine. Enroll in this Postgraduate Certificate!”*



## Management



### Dr. Bustamante Munguira, Elena

- Head of the Intensive Care Medicine Department of the Hospital Clínico de Valladolid
- Medical Director of the Health Area of Ibiza and Formentera
- Specialist in Intensive Care Medicine
- Teacher of refresher courses and workshops
- Illustrious Official College of Physicians of Salamanca Award.
- Ramón Llul Award of the Patient Safety Unit
- PhD in Medicine and Surgery
- Master's Degree in Management
- Medical and Healthcare Management
- Master in Patient Safety



## Professors

### Ms. Curieses Andrés, Celia

- ◆ Intensive Care Physician at the Hospital Clínico Universitario de Valladolid, Spain
- ◆ Physician at Babcock International Group
- ◆ Physician at Ambuibérica
- ◆ Physician at the Hospital Recoletas Castilla y León
- ◆ Physician at Sanatorio Sagrado Corazón
- ◆ Physician at Valladolid City Hall
- ◆ Teacher at the Training and Employment Foundation of Castilla y León.
- ◆ Graduate in Medicine from the University of Valladolid.
- ◆ Degree in Chemistry from the University of Valladolid.

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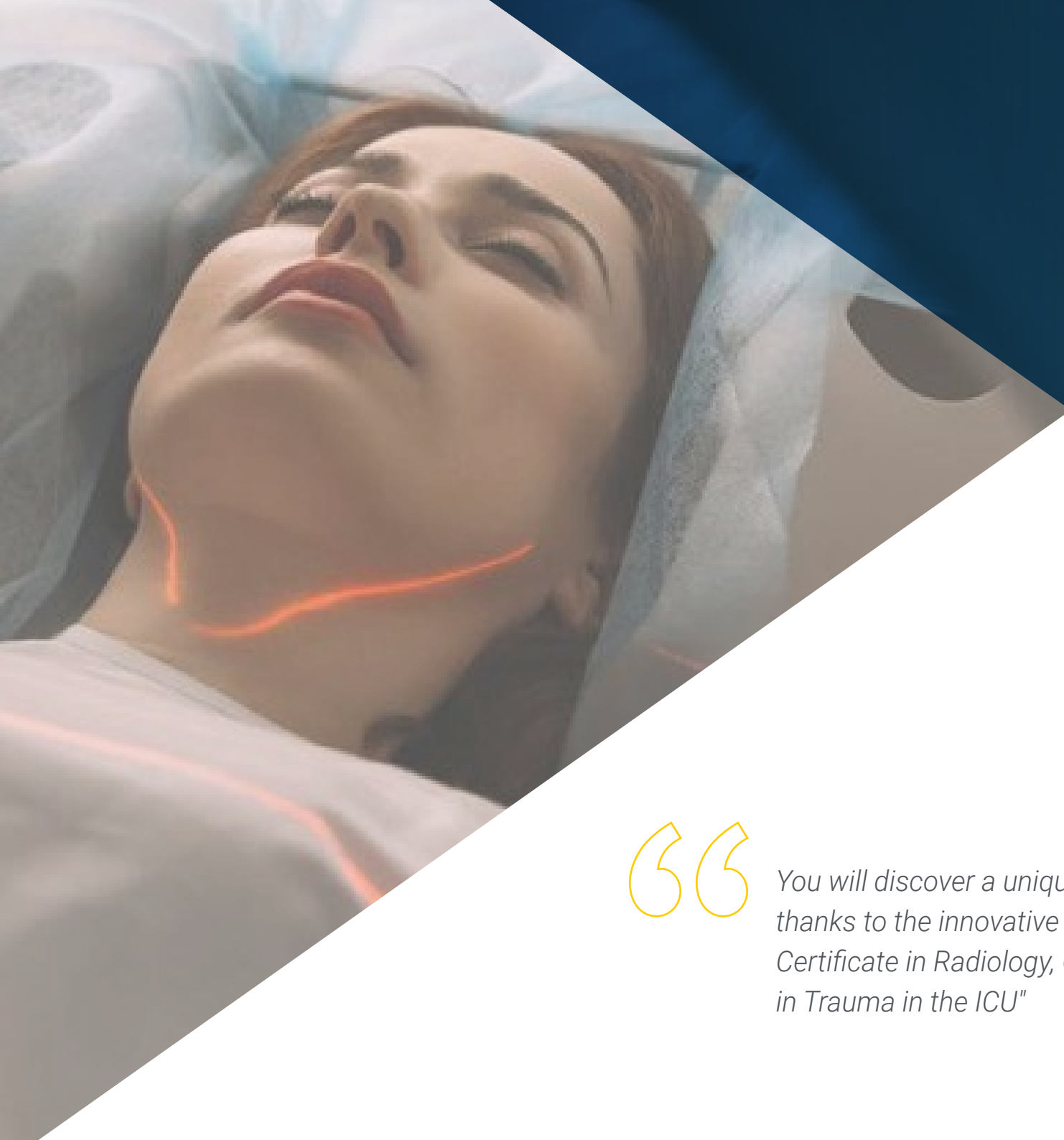
*A unique, key and decisive educational experience to boost your professional development"*

# 04

## Structure and Content

This academic program will provide the physician with the tools necessary to address the complex challenges associated with ICU Trauma, from initial detection to comprehensive rehabilitation. With an emphasis on in-depth understanding and practical application, the specialist will update his or her daily clinical practice to play an essential role in the trauma care team within the Intensive Care Unit (ICU). In this way, the graduate will develop their skills thanks to the innovative methodology of *Relearning*, consisting of the repetition of fundamental ideas to ensure the effective acquisition of knowledge.





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*You will discover a unique educational experience thanks to the innovative design of this Postgraduate Certificate in Radiology, Complications, Rehabilitation in Trauma in the ICU"*

## Module 1. Radiology, complications and rehabilitation in trauma in the ICU

- 1.1. Radiology in ICU
  - 1.1.1. Definition
  - 1.1.2. Structure
  - 1.1.3. Conclusions
- 1.2. Imaging management and protocols in the severely polytraumatized patient
  - 1.2.1. Assessment of clinical criteria
    - 1.2.1.1. Criteria for severity and suspicion of severe trauma
      - 1.2.1.1.1. Vital Signs
      - 1.2.1.1.2. Obvious injuries
      - 1.2.1.1.3. High energy injury mechanism
    - 1.2.1.2. Assessment according to signs and vital signs
      - 1.2.1.2.1. Dynamically stable hemo: Complete CT scan
      - 1.2.1.2.2. Dynamically unstable hemo: *Echo-fast*
  - 1.2.2. Standard CT Protocol: Patients with severity criteria without signs of shock.
    - 1.2.2.1. Cranial CT without contrast
    - 1.2.2.2. Cervical spine CT without contrast
      - 1.2.2.2.1. Bone window
      - 1.2.2.2.2. Soft tissue window
    - 1.2.2.3. Thorax-abdomen-pelvis CT with contrast
      - 1.2.2.3.1. Arterial phase study
      - 1.2.2.3.2. Portal phase study
  - 1.2.3. Shock protocol: Severity criteria and with signs of shock
    - 1.2.3.1. CT without VSD: Chest, abdomen and pelvis
      - 1.2.3.1.1. Arterial and venous phase
      - 1.2.3.1.2. Late phase
  - 1.2.4. Protocol for high suspicion of bladder-urethral injury
    - 1.2.4.1. CT scan without VSD of the abdomen and pelvis
  - 1.2.5. Other situations
    - 1.2.5.1. Suspicion of cervical vessel lesion
    - 1.2.5.2. Clinical suspicion of large complex facial fractures
    - 1.2.5.3. Suspected traumatic rupture of the esophagus.





- 1.3. Ultrasound in the initial care of the polytraumatized patient
  - 1.3.1. Ultrasound
  - 1.3.2. What is *Echo-fast*?
  - 1.3.3. Indications
  - 1.3.4. Information provided and attitude derived according to findings
- 1.4. TBI.
  - 1.4.1. TBI.
  - 1.4.2. Study Protocol
  - 1.4.3. Systematic search for findings
    - 1.4.3.1. Intra-extraxial hematomas
    - 1.4.3.2. Mass effect exerted by these hematomas: ventricular or sulcus collapse, obstruction of basal cisterns, signs of cerebral herniation.
    - 1.4.3.3. Traces of bone fracture, calotte and skull base.
    - 1.4.3.4. Fracture traces and alignment of vertebral somas in sagittal plane.
- 1.5. Cervical trauma
  - 1.5.1. Cervical trauma
  - 1.5.2. Study Protocol
  - 1.5.3. Systematic search for findings
    - 1.5.3.1. Lesions of large cervical vessels
    - 1.5.3.2. Cervical vertebral fractures, assess signs of instability, assess possible extravasation of associated contrast.
- 1.6. Trauma of the dorsolumbar spine
  - 1.6.1. Dorsolumbar spine
  - 1.6.2. Study Protocol
  - 1.6.3. Systematic search for findings
    - 1.6.3.1. Thoracoabdominal great vessels lesions.
    - 1.6.3.2. Dorsolumbar vertebral fractures, assess signs of instability, assess for possible extravasation of associated contrast.
- 1.7. Thoracic Trauma.
  - 1.7.1. Thorax
  - 1.7.2. Study Protocol
  - 1.7.3. Systematic search for findings
    - 1.7.3.1. Injury of great thoracic vessels
    - 1.7.3.2. Hemo or pneumomediastinum
    - 1.7.3.3. Hemo or pneumothorax: Secondary mediastinal deviation
    - 1.7.3.4. Pulmonary laceration, pulmonary contusive foci, airway lesion.
    - 1.7.3.5. Single/multiple costal fracture traces
    - 1.7.3.6. Dorsal vertebral fractures, assess if listhesis, signs of instability
- 1.8. Abdominal Trauma.
  - 1.8.1. Abdomen
  - 1.8.2. Study Protocol
  - 1.8.3. Systematic search for findings
    - 1.8.3.1. Lesion of great abdominal vessels
    - 1.8.3.2. Hemo or pneumoperitoneum, high/low density free fluid
    - 1.8.3.3. Splenic or hepatic visceral lesion
    - 1.8.3.4. Lumbar vertebral fractures, assess signs of instability, assess possible points of associated contrast extravasation.
- 1.9. Pelvic Trauma
  - 1.9.1. Pelvis
  - 1.9.2. Study Protocol
  - 1.9.3. Systematic search for findings
    - 1.9.3.1. Pelvic great vessels lesion
    - 1.9.3.2. Hemo or pneumoperitoneum, high/low density free fluid
    - 1.9.3.3. Renal injury
- 1.10. Endovascular techniques and the hybrid operating room
  - 1.10.1. Operating Theatre
  - 1.10.2. Intervention Techniques
    - 1.10.2.1. Interventionism in pelvic trauma
      - 1.10.2.1.1. Indications
    - 1.10.2.2. Interventional procedures in liver trauma
      - 1.10.2.2.1. Indications
    - 1.10.2.3. Interventional procedures in splenic and renal trauma
      - 1.10.2.3.1. Indications
    - 1.10.2.4. Interventional procedures in thoracic trauma
    - 1.10.2.5. Indications
  - 1.10.3. What is the hybrid operating room?
  - 1.10.4. Present and future of the hybrid OR

# 05 Methodology

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

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



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

## At TECH we use the Case Method

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

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.





## Relearning Methodology

At TECH we enhance the 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 Program

The Postgraduate Certificate in Radiology, Complications, Rehabilitation in Trauma in the ICU guarantees, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate program issued by TECH Global University.





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*Successfully complete this program and receive your university certification without traveling or complex paperwork"*

This program will allow you to obtain your **Postgraduate Certificate in Radiology, Complications, Rehabilitation in Trauma in the ICU** 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 Radiology, Complications, Rehabilitation in Trauma in the ICU**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



\*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.



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in the ICU

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# Postgraduate Certificate

Radiology, Complications, Rehabilitation  
in Trauma in the ICU