

Postgraduate Certificate

Radiology of Firearms and Explosives Trauma in Forensic Investigation





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Radiology of Firearms and Explosives Trauma in Forensic Investigation

- » 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-firearms-explosives-trauma-forensic-investigation

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01

Introduction

The United Nations shared its concern about the use of firearms at a recent press conference. The UN recognizes that there has been an increase in the use of devices such as handguns. For example, last year there were 20,910 deaths from gun violence in the United States. In order to help advance criminal cases, this organization urges medical professionals to incorporate the latest Forensic Radiology techniques into their practice. However, this requires practitioners to remain abreast of all technological advances in this area. For this reason, TECH implements a 100% online university program that will analyze these innovations.



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Through this program, supported by Relearning, you will determine the severity of injuries by analyzing radiological images and make findings useful for judicial investigations"

While Industry 4.0 has had a positive impact in the forensic context, doctors are currently still facing challenges related to technological tools such as Ultrasounds. Added to this is the complexity of interpreting images accurately, bearing in mind the destructive nature of trauma caused by firearms and explosives. In view of this, it is vital that specialists have a vast knowledge of both normal and pathological anatomy, as well as of the effects of physical damage in order to properly interpret the snapshots and establish the causes of the injuries.

It is also relevant that they know the structure of the explosive elements in order to subsequently establish the extent of the injuries.

In this context, TECH is developing a revolutionary program in Radiology of Firearms and Explosives Trauma in Forensic Investigation. The syllabus will analyze issues ranging from firearm projectiles to the characterization of the trauma they produce. At the same time, the syllabus will delve into the use of the most innovative radiological techniques, among which Computed Axial Tomography stands out. Thanks to this, graduates will obtain precise images that will facilitate their interpretation of lacerations, contusions or traumas. In addition, the didactic contents will focus on explosive injuries, paying attention to the different explosive charges and the radiological assessment of wounds. During the specialization, experts will enhance their competencies to perform forensic assessments with objectivity.

Thanks to the fact that the program is taught entirely in an online format, practitioners will have the flexibility to adapt their learning process to their commitments. In this way, they will be able to customize their timetables, evaluation schedules and study pace. On the other hand, the pedagogical approach of the academic itinerary incorporates the application of Relearning, a teaching system of which TECH is a pioneer. This will guarantee graduates a solid and lasting understanding of the fundamental concepts.

This **Postgraduate Certificate in Radiology of Firearms and Explosives Trauma in Forensic Investigation** 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 Forensic Radiology
- ♦ The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable 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
- ♦ The availability of access to the contents from any fixed or portable device with an Internet connection



TECH's online methodology will allow you to practice in simulated learning environments through case studies"

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You will be known for conducting the most thorough forensic evaluations in the context of firearms and explosives trauma"

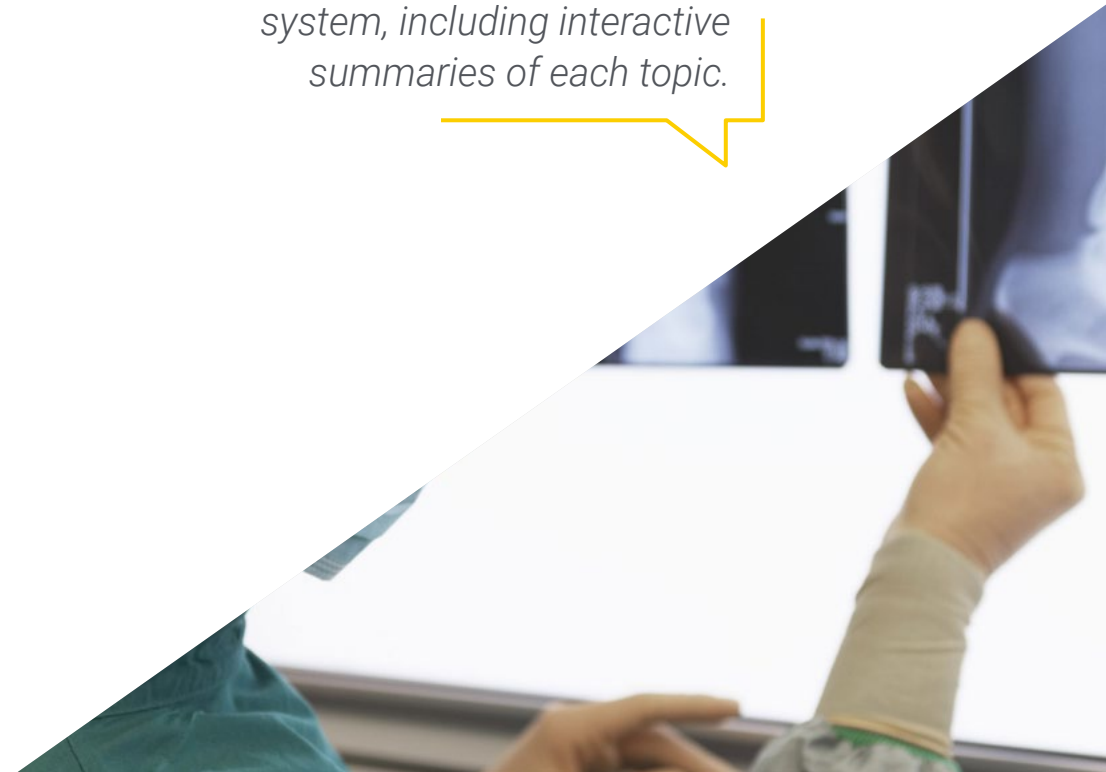
The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing program, as well as renowned specialists from leading societies and prestigious universities.

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 course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

Do you want to go deeper into Virtual Autopsy in deaths caused by firearms injuries? With this program, you will get the most out of this procedure in only 150 hours.

You will update your knowledge through the most modern didactic tools of the academic system, including interactive summaries of each topic.



02 Objectives

Upon completion of this university program, practitioners will be equipped with the most innovative radiological imaging procedures to identify and analyze specific traumatic injuries. In this way, they will obtain high quality images to appreciate damage such as bone fractures or the presence of foreign objects in bodies (bullets being a sample). In addition, graduates will enhance their skills in assessing the severity and extent of trauma. This will enable health professionals to contribute relevant clinical findings to judicial investigations.



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Enhance your medical work and update yourself thanks to a complete academic itinerary and audiovisual materials that will bring out the best version of your professional self"



General Objectives

- Determine the use of radiology as an auxiliary method in the judicial process of crimes
- Identify injuries, mechanisms of injury and causes of death with firearms
- Identify injury patterns and causes of death with explosive elements
- Correctly interpret the different types of radiological techniques according to need, tissue condition and availability





Specific Objectives

- Identify the different types and patterns of injuries that can be generated by firearm projectiles and explosives
- Determine the different injuries and systemic compromises that can be generated by firearm projectiles and explosives
- Identify through radiodiagnostic means injured areas
- Interpret the role of radiology in the legal world

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A syllabus without fixed schedules or face-to-face classes, where you will only need a device with Internet to access the Virtual Campus”



03

Course Management

Committed to providing educational experiences of exceptional quality, TECH makes an effort when it comes to forming its teaching staff. On this occasion, for this program it brings together true references in the field of Forensic Radiology.

These professionals are highly specialized in Trauma with Firearms and Explosives, which has allowed them to work in prestigious institutions. In this sense, they have contributed to clarify the reasons of deaths in multiple cases. In this way, graduates have the guarantees they need to update their knowledge and experience a leap in quality in their practice.





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Thanks to the guidance of the teachers, you will enjoy a progressive and natural learning process that will take you to the pinnacle of Forensic Radiology”

Management



Dr. Ortega Ruiz, Ricardo

- PhD in Biomedical Engineering from the Polytechnic University of Madrid, specializing in Diagnostic Imaging
- Director of the Laboratory of Archaeology and Forensic Anthropology of the Institute of Professional Training in Forensic Sciences
- Investigator of Crimes against Humanity and War Crimes in Europe and the Americas
- Judicial Expert in Human Identification
- International Observer in Drug Trafficking Crimes in Iberoamerica
- Collaborator in police investigations for the search of missing persons in foot or canine tracking with Civil Protection
- Instructor of adaptation courses in Basic Scale to Executive Scale aimed at the Scientific Police
- Master's Degree in Forensic Sciences applied to the Search for Missing Persons and Human Identification Cranfield University
- Master's Degree in Archeology and Heritage with the Specialty of Forensic Archeology for the Search of Missing Persons in Armed Conflict

Professors

Dr. Galezo Chavarro, Diana

- Technician Responsible of the South Regional of the National Institute of Legal Medicine and Forensic Sciences
- Forensic specialist in the Regional Clinical, Psychology, Odontology and Forensic Psychiatry Group
- Expert in support to the certification process in Clinical Forensics
- Expert in Forensic Sciences and Probation Technique at the Libre University
- Expert in Search for Missing Persons in Iberoamerica



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

04

Structure and Content

This university program will focus on the interpretation of radiological images in trauma caused by Firearms and Explosives. For this purpose, the academic itinerary will delve into both the operation and mechanics of the devices. Therefore, graduates will be able to analyze factors such as projectile trajectory, number of impacts and entry orifices. The syllabus will also delve into the use of state-of-the-art radiodiagnostic tools such as Ultrasound, Axial Tomography or Virtual Autopsy. In this sense, physicians will enhance their skills in the interpretation of images to distinguish between traumatic injuries and medical pathologies.

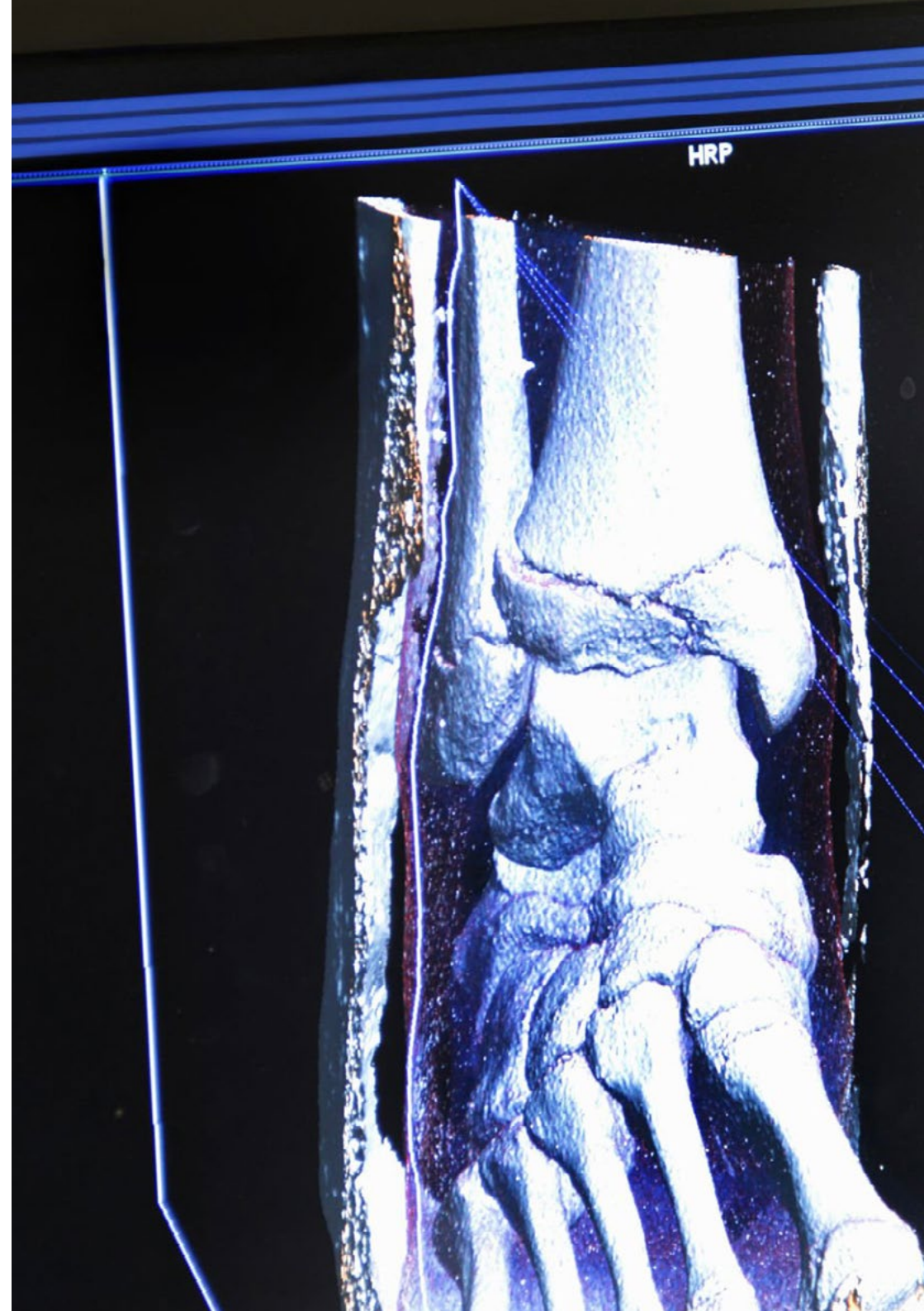


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A syllabus that will provide you with the most innovative techniques to interpret the affection of the results of projectiles and explosives both at bone and soft tissue level”

Module 1. Radiology of Firearms and Explosives Trauma in Forensic Investigation

- 1.1. Firearms and Projectiles
 - 1.1.1. Classification of Firearms
 - 1.1.2. Elements that Compose a Firearm
 - 1.1.3. Structure of the Firearm
 - 1.1.4. Firearm Projectiles
- 1.2. Characterization of Wounds and Firearm Projectile Trajectory
 - 1.2.1. Entrance Orifice
 - 1.2.2. Trajectory
 - 1.2.3. Outlet Orifice
- 1.3. X-ray Technique and Firearm Projectiles
 - 1.3.1. Number of Projectiles
 - 1.3.2. Probable Trajectory
 - 1.3.3. Probable Caliber
 - 1.3.4. Type of Firearm
- 1.4. Axial Tomography and Firearm Projectiles
 - 1.4.1. Number of Projectiles
 - 1.4.2. Trajectory
 - 1.4.3. Type of Weapons Used
- 1.5. Ultrasound and Firearm Projectile
 - 1.5.1. Number of Projectiles
 - 1.5.2. Trajectory
 - 1.5.3. Type of Weapons Used
- 1.6. Virtual Autopsy in Deaths Caused by Firearm Projectile Wounds
 - 1.6.1. Simple Radiography
 - 1.6.2. Computerized Axial Tomography
 - 1.6.3. Magnetic Resonance



- 1.7. Explosives
 - 1.7.1. Typologies of Explosive Elements
 - 1.7.2. Categorization
 - 1.7.3. Mechanics of Explosions
- 1.8. Classification of Blast Injuries
 - 1.8.1. Primary
 - 1.8.2. Secondary
 - 1.8.3. Tertiary
 - 1.8.4. Quaternary
- 1.9. Radiodiagnostic Imaging in the Search for and Retrieval of Evidence
 - 1.9.1. Simple Radiography
 - 1.9.2. Computerized Axial Tomography
 - 1.9.3. Magnetic Resonance
- 1.10. Radiological Assessment of Blast Injuries
 - 1.10.1. Cranial
 - 1.10.2. Cervical
 - 1.10.3. Chest
 - 1.10.4. Abdomen
 - 1.10.5. Extremities



In just 6 weeks, you will optimize your medical practice and give your career the boost it needs. Enroll now!"

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.



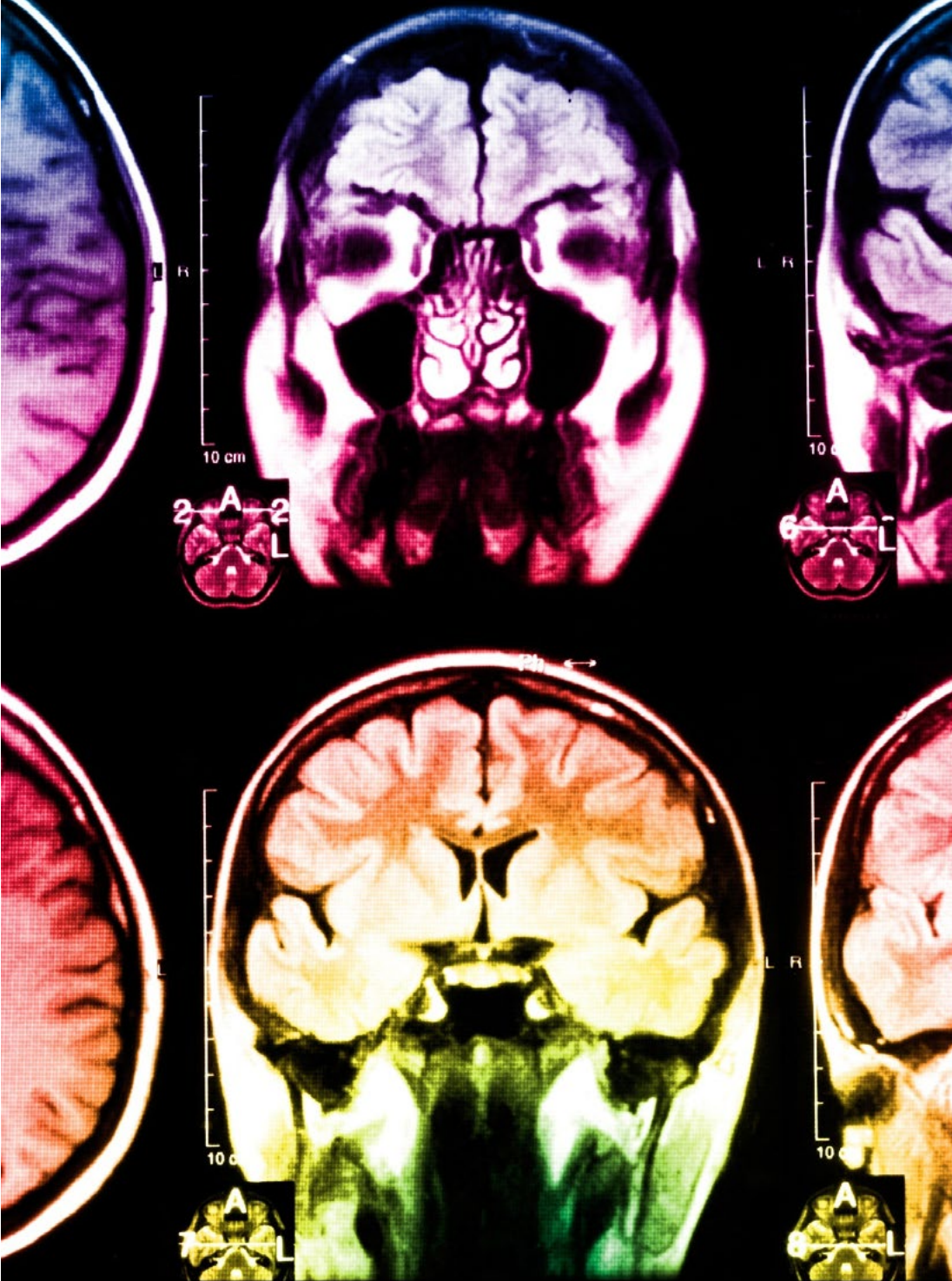
At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

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.

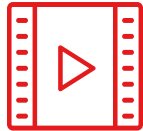
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

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

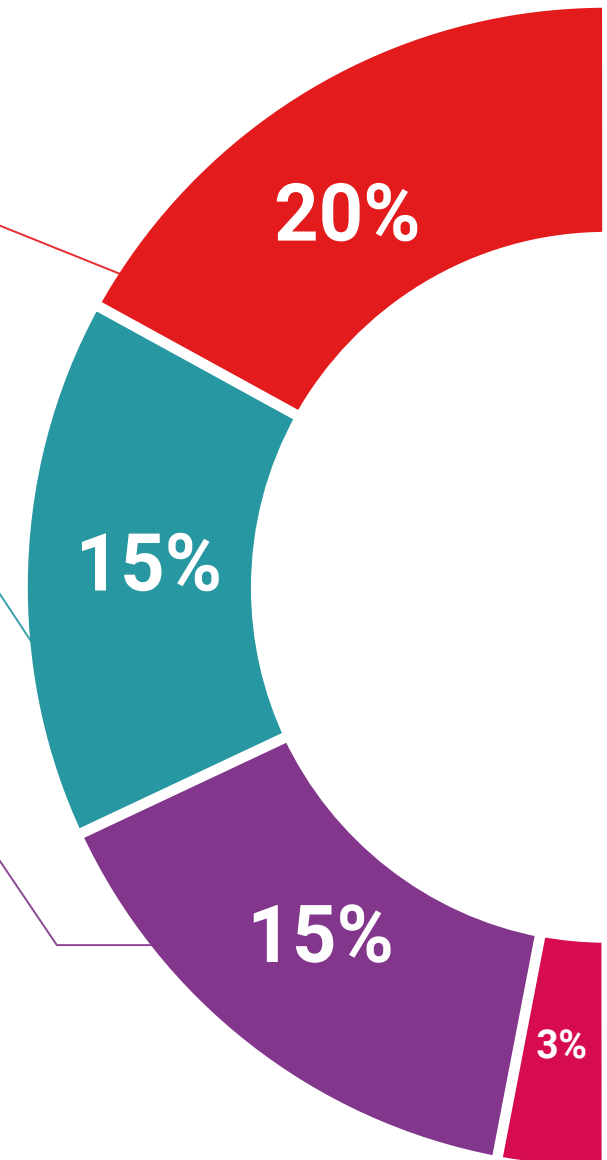
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

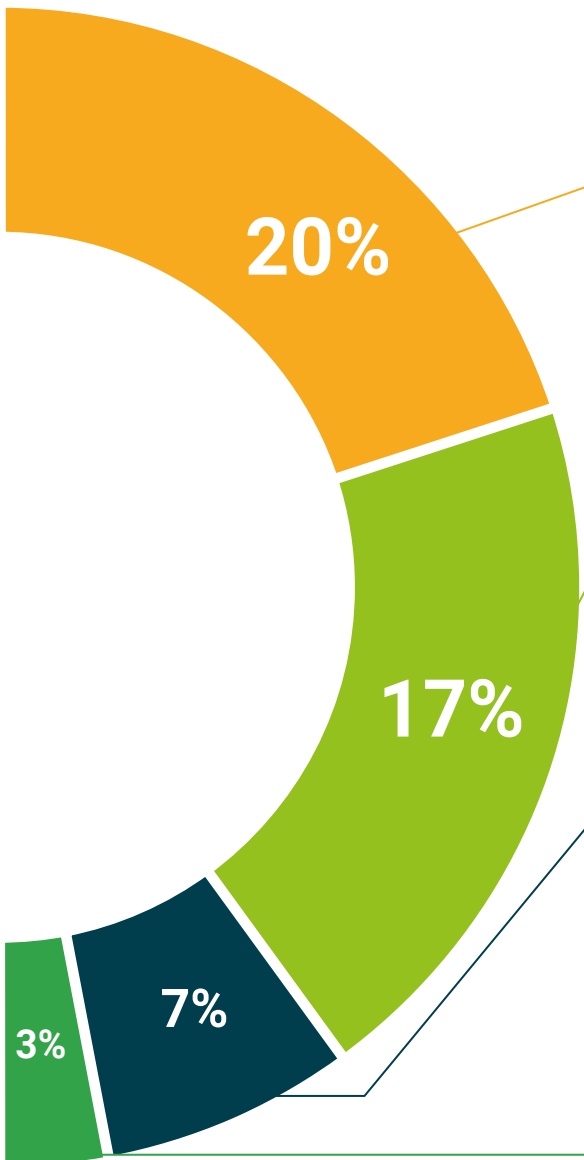
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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

Certificate

The Postgraduate Certificate in Radiology of Firearms and Explosives Trauma in Forensic Investigation guarantees, in addition to the most accurate and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.





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

This private qualification will allow you to obtain a **Postgraduate Certificate in Radiology of Firearms and Explosives Trauma in Forensic Investigation** 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** private qualification 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 of Firearms and Explosives Trauma in Forensic Investigation**

Modality: **online**

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Accreditation: **6 ECTS**





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