



## Postgraduate Diploma

Angiography and Vascular Diagnosis

» Modality: online

» Duration: 6 months

» Certificate: TECH Global University

» Accreditation: 18 ECTS

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-angiography-vascular-diagnosis

# Index

 $\begin{array}{c|c} 01 & 02 \\ \hline & \\ \hline \\ 03 & 04 \\ \hline \\ \hline \\ Course Management & \\ \hline \\ \hline \\ p. 12 & \\ \hline \end{array}$ 

06 Certificate

p. 30





### tech 06 | Introduction

In the field of medical diagnostics, Angiography and Vascular Diagnostics occupy a preeminent place due to their ability to provide detailed visualizations of blood vessels and identify anomalies with high precision. Thanks to new technologies driven by the advent of Industry 4.0, medical staff have state-of-the-art tools to assess the clinical condition of their patients. For example, CT scans are useful for diagnosing a wide variety of conditions (such as traumatic injuries, infectious diseases, tumors, and even bone or vascular disorders). In order for physicians to get the most out of these instruments, they need to acquire practical skills for their optimal use.

In this context, TECH has developed a revolutionary Postgraduate Diploma in Angiography and Vascular Diagnostics. Conceived by references in this field, the academic itinerary will deepen the use of the latest generation machinery for vascular intervention (among which are the Access Needles, Dilators or Catheters). In line with this, the syllabus will provide graduates with strategies to prevent complications after procedures involving puncture. In addition, the didactic materials will delve into the most modern Non Invasive Vascular Imaging techniques (such as Magnetic Resonance Imaging and Doppler Ultrasound). In this regard, the program will analyze the keys to perform Balloon Angioplasty procedures safely and effectively. Thanks to this, physicians will skillfully employ Angiography not only as a diagnostic tool, but also as a guide in therapeutic interventions.

The program is made more dynamic thanks to the multimedia pills and the wide variety of teaching resources offered by TECH (such as specialized readings, interactive summaries or case studies). In addition, TECH's Relearning methodology will allow practitioners to obtain a much more effective update in a shorter period of time. Therefore, their learning process will be completely natural and progressive, so they will not have to invest long hours of study.

This **Postgraduate Diploma in Angiography and Vascular Diagnosis** 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 Angiology and Vascular Surgery
- The graphic, schematic and practical contents with which it is conceived gather scientific and practical information on those 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



Study from the comfort of your home and update your knowledge online with TECH Global University, the biggest online university in the world"



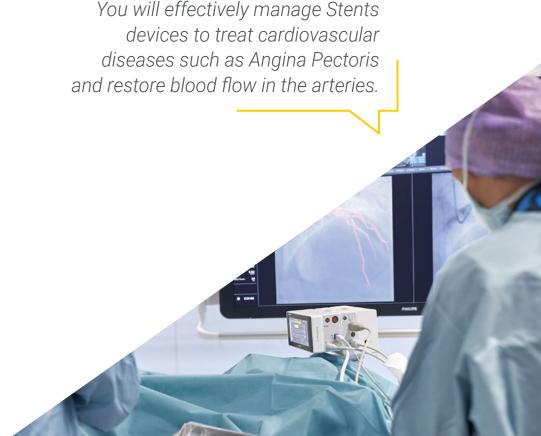
You will delve into the use of the most sophisticated embolic protection devices and prevent your patients from suffering serious complications such as strokes and heart attacks"

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 incorporate innovative Drug Delivery Monitoring techniques into your clinical practice? Achieve it with this 6-month program.







## tech 10 | Objectives



### **General Objectives**

- Develop the technical skills necessary to accurately perform and analyze angiographic studies
- Promote an appreciation of the importance of multidisciplinary teamwork in the interpretation and management of vascular angiographic results
- Acquire skills to apply techniques such as angioplasty, Stent placement, and other minimally invasive procedures
- Determine the procedures and protocols for performing and interpreting computed tomography angiography (CTA) in the context of vascular interventional procedures



This syllabus has a wide range of multimedia resources, such as explanatory videos or case studies, promoting an enjoyable update"





### Module 1. Vascular Angiography

- Acquire specialized knowledge about the physical and technological principles behind vascular angiography, including digital imaging, contrast injection and fluoroscopy
- Develop practical skills in patient preparation, safe contrast administration, and monitoring during vascular angiography procedures
- Analyze clinical cases and angiographic studies to identify vascular abnormalities, assess disease severity and plan therapeutic interventions
- Integrate angiographic findings with clinical information and results of other diagnostic imaging tests to make an accurate differential diagnosis and formulate an optimal treatment plan for each patient

#### Module 2. Non-Invasive Vascular Imaging

- Analyze the physical principles and technology behind Doppler ultrasound as a tool for the evaluation of vascular flow and structure
- Identify the characteristics and limitations of magnetic resonance angiography (MRA) in the visualization of vascular anatomy and its usefulness in the diagnosis of vascular pathologies
- Compare the advantages and disadvantages of each noninvasive vascular imaging modality in specific clinical situations, such as Peripheral Artery Disease, Aneurysms, and Vascular Malformations
- Determine the clinical indications and benefits of each imaging modality in diagnosis, follow-up and treatment planning in vascular diseases

#### Module 3. Vascular Interventions

- Determine the fundamental principles of Angioplasty, including balloon dilatation and the use of Stents, in the treatment of arterial stenosis and Occlusions
- Identify the indications and contraindications for percutaneous angioplasty and detail the necessary pre and postoperative care
- Analyze the techniques and devices used in embolization, including embolization materials and selective occlusion procedures
- Explore the applications of vascular interventional procedures in the treatment of aneurysms, Vascular Malformations and Arteriovenous Fistulae





### tech 14 | Course Management

### Management



### Dr. Del Río Solá, María Lourdes

- Chief from the Vascular Angiology and Surgery Service at the Valladolid University Clinical Hospital.
- Specialist in Angiology and Vascular Surgery
- European Board in Vascular Surge
- Academic Correspondent of the Royal Academy of Medicine and Surgery
- Full Professor at the European University Miguel de Cervantes
- Associate Professor in Health Sciences at the University of Valladolid.

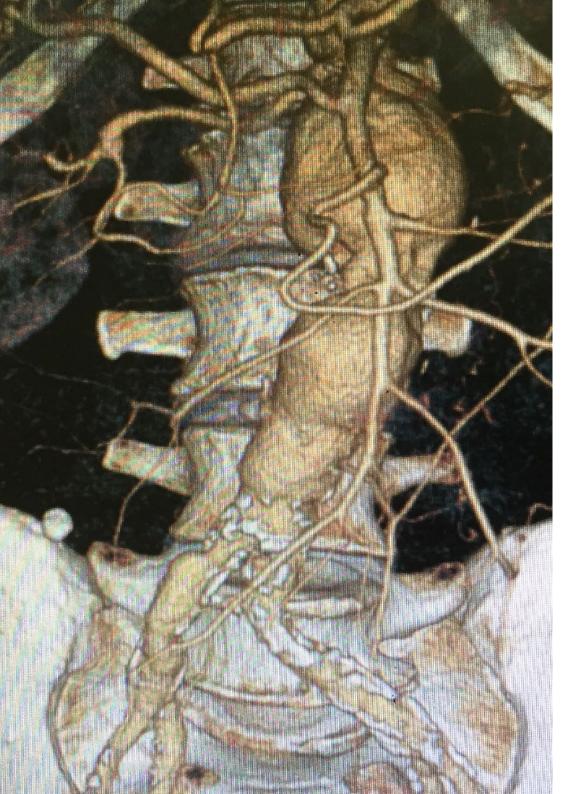
### **Professors**

### Dr. Gutiérrez Véliz, Daniel

- Deputy Chief of Surgery and Chief of Vascular Surgery at Chilean Public Assistance Emergency Hospital
- General and Peripheral Vascular Surgeon of Public Assistance Emergency Hospital
- Peripheral Vascular Surgeon at las Condes and Redsalud Clinic, Santiago de Chile
- Bachelor of Medicine from the Catholic University of Maule
- Expert in General Surgery from the University of Santiago de Chile
- Subspecialist in Peripheral Vascular Surgery from the University of Chile, Clinical University Hospital of Chile
- Member of: Chilean Society of Surgery (SOCHICIR), Chilean Society of Vascular and Endovascular Surgery (SOCHIVAS), American College of Surgery (FACS)

### Dr. González Ruíz, Aleyna

- Head of the Angiology Area at Clinext (Extremities Clinic)
- \* Specialist Physician in Angiology and Vascular Surgery
- Bachelor of Medicine, General Surgery and Midwife by the Autonomous University of Chiapas
- Specialty in Angiology and Vascular and Endovascular Surgery at the Antonio Fraga Mouret Specialty Hospital
- \* Postgraduate in Doppler Ultrasound, ANÁHUAC University
- Postgraduate in Integral Angiology, ANÁHUAC University
- Postgraduate in Endovascular Surgery, ANÁHUAC University
- Member of Mexican Society of Angiology and Vascular and Endovascular Surgery



### Course Management | 15 tech

### Dr. Estévez Fernández, Isabel

- Chief of the Angiology and Vascular Surgery Section of the Hospital San Jorge de Huesca
- Physician at the Clinical Hospital of Valladolid
- Stay at Barnes-Jewish Hospital, St. Louis, Missouri USA.
- Doctor of Medicine from the University of Valladolid
- Degree in Medicine from the University of Valladolid
- University Expert in Venous Thromboembolic Disease and Cancer
- Training as Director of X-Ray Facilities by the Spanish Society of Medical Physics
- Course on Radiological Protection by the Ministry of Health, Consumption and Social Welfare
- Member of Spanish Society of Angiology and Vascular Surgery





### tech 18 | Structure and Content

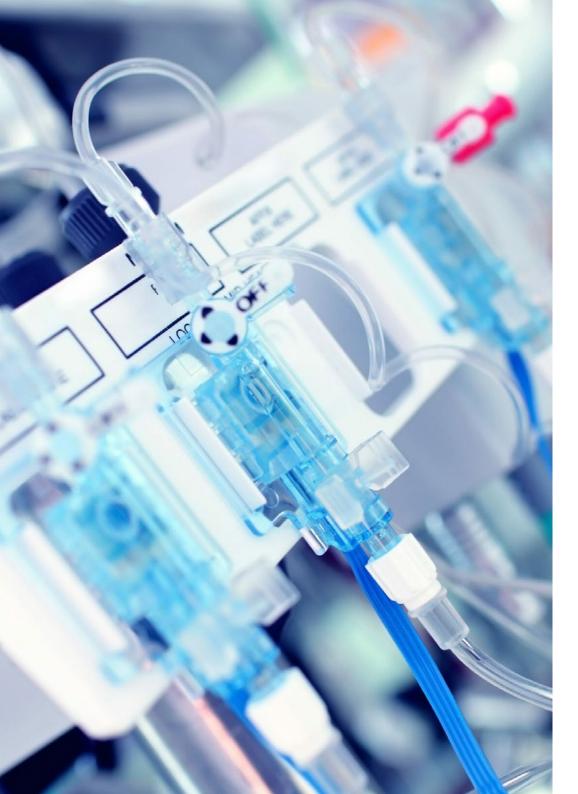
### Module 1. Vascular Angiography

- 1.1. Evaluation and Management of the Pre-procedure of the Patient with Vascular Pathology
  - 1.1.1. Clinical History and Physical Evaluation
  - 1.1.2. Psychological Preparation and Informed Consent
  - 1.1.3. Evaluation of Contraindications and Risk Factors
- 1.2. Safety in Vascular Interventional Procedures
  - 1.2.1. Radiological Protection for the Patient and Staff
  - 1.2.2. Infection Prevention and Sterility Control
  - 1.2.3. Emergency Procedures and Response Plan
- 1.3. Tools in Vascular Intervention: Access Needles, Guides, Dilators and Catheters
  - 1.3.1. Access Needles
  - 1.3.2. Guides and Advancement Techniques
  - 1.3.3. Dilators and Catheters
- 1.4. Contrast Agents in Vascular Intervention
  - 1.4.1. Iodinated Contrast Agents
  - 1.4.2. Evaluation of Renal Function and Risk of Nephrotoxicity
  - 1.4.3. Adverse Reactions to Contrast
- 1.5. Alternative Contrast Agents: Carbon Dioxide Gas, Gadolinium Chelates
  - 1.5.1. Carbon Dioxide Gas as a Contrast Agent
  - 1.5.2. Gadolinium Chelates in Angiography
  - 1.5.3. Alternative Contrast Agents
- 1.6. Intraprocedural Care in Vascular Intervention: Sedation, Antibiotic Prophylaxis, Blood Pressure Control, Anticoagulation
  - 1.6.1. Safe Administration of Sedatives during the Procedure
  - 1.6.2. Antibiotics and Prophylaxis Protocols prior to the Intervention
  - 1.6.3. Hemodynamic Stability and Prevention of Thrombosis
- 1.7. Arterial Puncture: Common Femoral Artery, Axillary or High Brachial Artery, Translumbar Aorta, Unusual Arterial Access
  - 1.7.1. Puncture Site and Artery Evaluation
  - 1.7.2. Femoral and Axillary Artery Puncture Techniques
  - 1.7.3. Management of Unusual Puncture Sites

- Venous Puncture: Common Femoral Vein, Internal Jugular Vein, Subclavian Vein, Veins of the
  - of the Upper Extremity, Inferior Cava Vein
  - 1.8.1. Evaluation of the Central and Peripheral Venous System
  - 1.8.2. Venous Catheter Puncture and Positioning Techniques
  - .8.3. Complications and Management Strategies during and after Puncture
- 1.9. Other Venous Accesses
  - 1.9.1. Deep Vein Access: Deep Femoral Vein or External Jugular Vein
  - 1.9.2. Access in Emergency Situations
  - 1.9.3. Risk-Benefit Assessment to Determine the Best Venous Access
- 1.10. Do's and Don'ts in Vascular Interventional Procedures
  - 1.10.1. Safety Protocols and Etiquette in the Angiography Area
  - 1.10.2. Preventing Complications and Common Errors During the Procedure
  - 1.10.3. Teamwork Strategies in the Angiographic Environment

### Module 2. Non-Invasive Vascular Imaging

- 2.1. Ultrasound in the Diagnosis of Vascular Pathology Susceptible to Intervention.
  - 2.1.1. Ultrasound
  - 2.1.2. Clinical Applications of Vascular Ultrasound
  - 2.1.3. Acquisition Techniques and Scanning Protocols
- 2.2. Grayscale Ultrasound in the Diagnosis of Vascular Pathology Susceptible to Intervention
  - 2.2.1. Interpretation of Grayscale Images
  - 2.2.2. Assessment of Vascular Morphology and Structure
  - 2.2.3. Differential Diagnosis and Normal Findings
- 2.3. Doppler Ultrasound in the Diagnosis of Vascular Pathology Susceptible to Intervention
  - 2.3.1. Doppler Effect
  - 2.3.2. Interpretation of Real Time Blood Flows
  - 2.3.3. Measurement of Velocities and Calculation of Hemodynamic Indices
- Color Doppler Ultrasound in the Diagnosis of Vascular Pathology Susceptible to Intervention
  - 2.4.1. Color Doppler Ultrasound over Conventional Doppler Ultrasound
  - 2.4.2. Applications in the Diagnosis of Vascular Pathology
  - 2.4.3. Limitations and Artifacts of Color Doppler Ultrasound



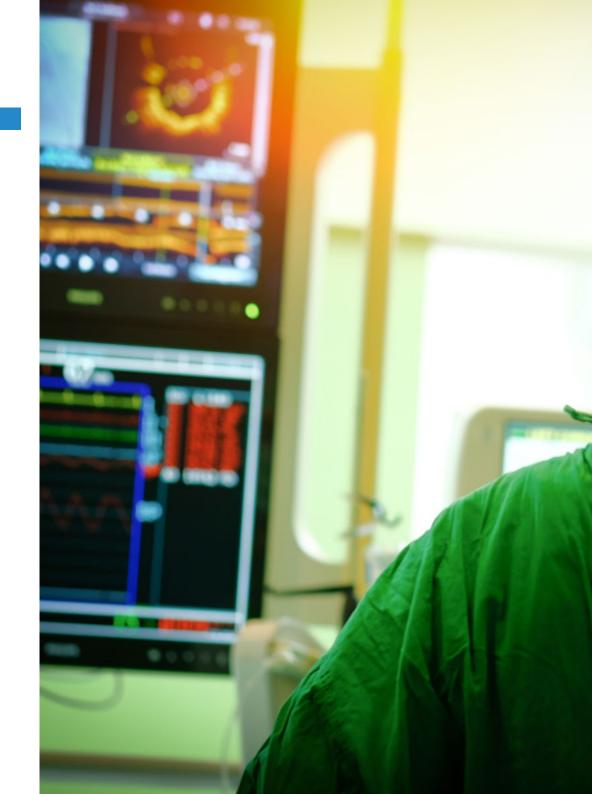
### Structure and Content | 19 tech

- 2.5. Energy Doppler Ultrasound in the Diagnosis of Vascular Pathology
  - 2.5.1. Energy Doppler Ultrasound
  - 2.5.2. Clinical Utility in the Study of Low-Velocity Vascular Flows
  - 2.5.3. Evaluation of Tissue Perfusion
- 2.6. Contrast Agents for Ultrasound in the Diagnosis of Vascular Pathology Susceptible to Intervention
  - 2.6.1. Contrast Agents
  - 2.6.2. Visualization and Characterization of Vascular Lesions
  - 2.6.3. Safety in the Use of Ultrasonographic Contrast Agents in Vascular Diagnostics in Vascular Diagnosis
- 2.7. Magnetic Resonance Imaging and Angiography
  - 2.7.1. Magnetic Resonance Imaging for the Diagnosis Prior to Endovascular Procedures
  - 2.7.2. Magnetic Resonance Angiography Protocols
  - 2.7.3. Image Interpretation and Differential Diagnosis
- 2.8. Computed Tomography and Computed Tomography Angiography Prior to Endovascular Procedures
  - 2.8.1. Image Acquisition and Optimization Protocols
  - 2.8.2. Applications in the Study of the Peripheral and Central Vasculature
  - 2.8.3. Evaluation of Complications and Limitations
- 2.9. Post-Processing of Diagnostic Images of Vascular Pathologies.
  - 2.9.1. Data Reconstruction and Visualization Techniques
  - 2.9.2. Quantitative and Qualitative Image Analysis
  - 2.9.3. Integration of Results in the Radiological Report
- 2.10. Technological Advances and Trends in Noninvasive Vascular Imaging
  - 2.10.1. Innovations in Hardware and Software to Improve Image Quality
  - 2.10.2. Developments in Multimodality Imaging Techniques
  - 2.10.3. Personalization of Treatment

### tech 20 | Structure and Content

### Module 3. Vascular Interventions

- 3.1. Balloon Angioplasty
  - 3.1.1. Angioplasty Mechanisms
  - 3.1.2. Patient Selection and Preprocedural Evaluation
  - 3.1.3. Angioplasty Techniques and Procedures
- 3.2. Embolic Protection Devices
  - 3.2.1. Embolic Protection Devices
  - 3.2.2. Indications and Clinical Utility
  - 3.2.3. Safety and Potential Complications of Atheroembolism
- 3.3. Stents and Stent-Grafts for Endovascular Treatment
  - 3.3.1. Stents and Stent-Grafts
  - 3.3.2. Implantation and Placement Techniques
  - 3.3.3. Stent-Grafts in the Treatment of Aneurysms
- 3.4. Pharmacological Thrombolysis in Acute Thrombosis
  - 3.4.1. Thrombolytic Agents
  - 3.4.2. Administration and Monitoring Protocols
  - 3.4.3. Clinical Outcomes and Associated Complications
- 3.5. Mechanical Thrombectomy in Acute Thrombosis
  - 3.5.1. Thrombectomy Devices
  - 3.5.2. Thrombectomy Procedures and Techniques
  - 3.5.3. Outcomes and Effectiveness in Vascular Recanalization
- 3.6. Pharmacomechanical Thrombolysis in Acute Thrombosis
  - 3.6.1. Pharmacomechanical Thrombolysis
  - 3.6.2. Devices and Techniques Used
  - 3.6.3. Comparison with Other Methods of Thrombolysis
- 3.7. Vasodilator Drugs in Limb Ischemia
  - 3.7.1. Mechanism of Action and Vasodilator Effects in Limb Ischemia
  - 3.7.2. Clinical Uses in Vascular Interventions
  - 3.7.3. Administration of Drugs and Monitoring of Results after Administration of Vasodilator Drugs





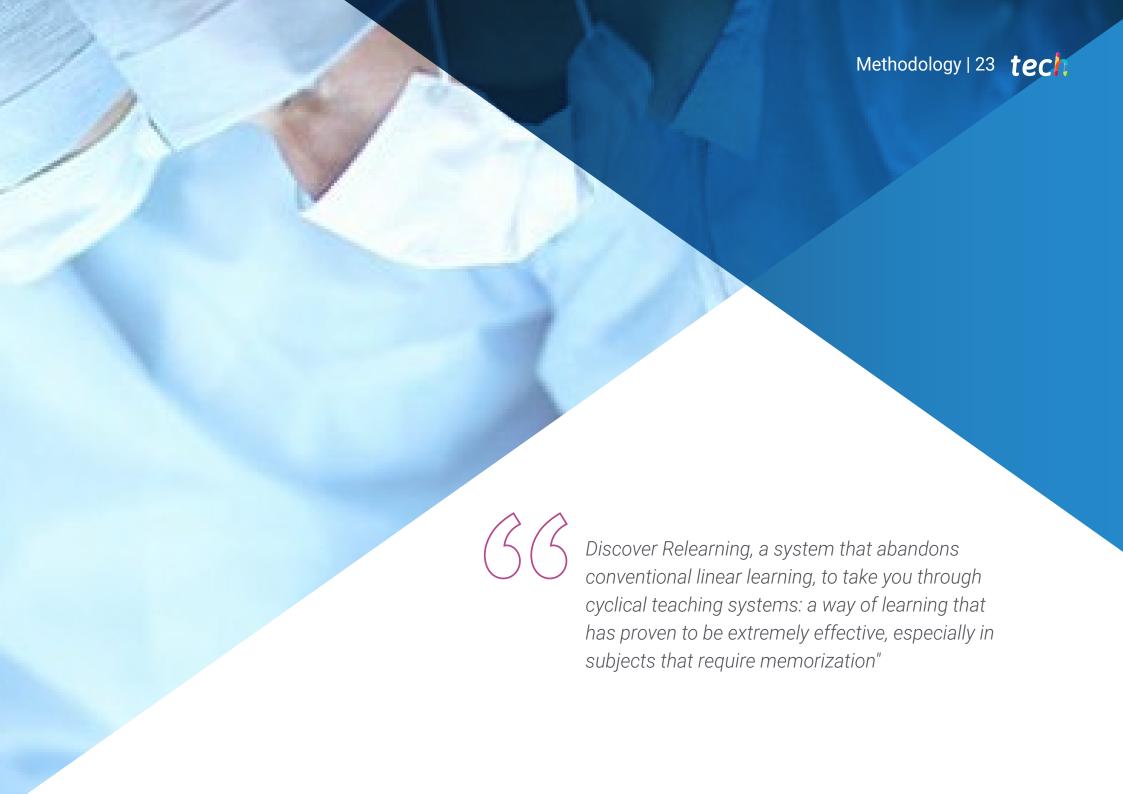
### Structure and Content | 21 tech

- 3.8. Endovascular Embolization and Ablation in Vascular Malformations
  - 3.8.1. Embolization and Ablation
  - 3.8.2. Embolization Techniques
  - 3.8.3. Endovascular Ablation: Methods and Clinical Applications
- 3.9. Pseudoaneurysms of Arterial Access
  - 3.9.1. Evaluation of Pseudoaneurysms after Radial Access
  - 3.9.2. Endovascular and Surgical Treatment
  - 3.9.3. Follow-up and Management of Complications
- 3.10. Implantation of Devices for Endovascular Treatment
  - 3.10.1. Implantation Techniques
  - 3.10.2. Device Selection for Endovascular Treatment
  - 3.10.3. Perioperative Management and Postimplantation Follow-Up



This university program gives you the opportunity to update your knowledge in a real scenario, with the maximum scientific rigor of an institution at the forefront of technology. Enroll now!"





### tech 24 | Methodology

#### 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:

- 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.



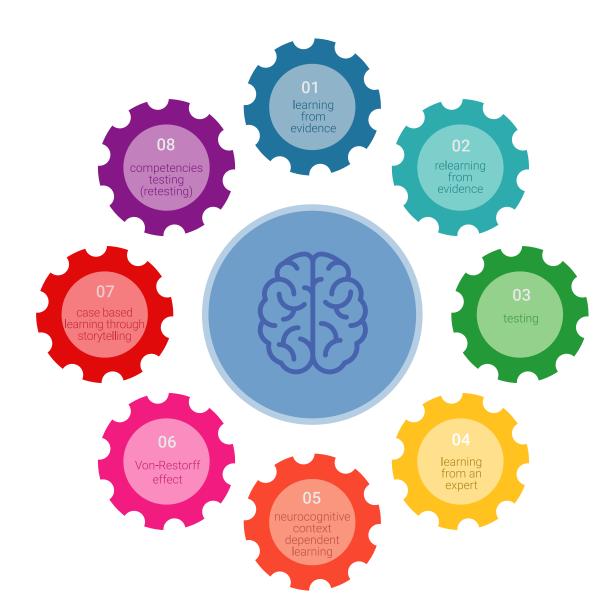


### Relearning Methodology

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.



### Methodology | 27 tech

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.

### tech 28 | Methodology

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**

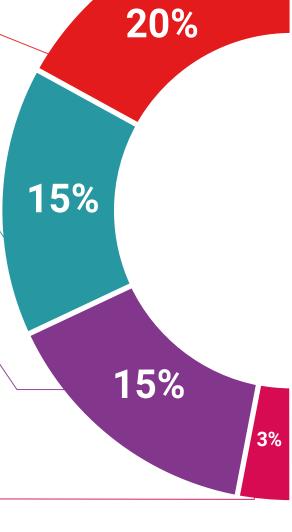
TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many 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.

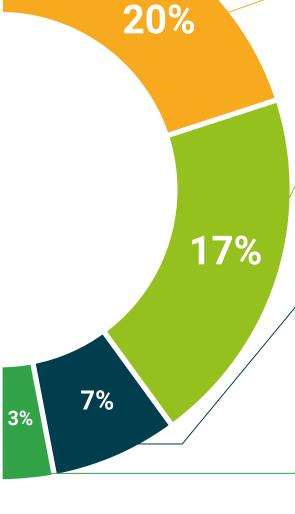
The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### **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.









### tech 32 | Certificate

This private qualification will allow you to obtain a **Postgraduate Diploma in Angiography and Vascular Diagnosis** 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 Diploma in Angiography and Vascular Diagnosis

Modality: Online

Duration: 6 months

Accreditation: 18 ECTS



#### Postgraduate Diploma in Angiography and Vascular Diagnosis

This is a private qualification of 540 hours of duration equivalent to 18 ECTs, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024



health confidence people
leducation information tutors
guarantee accreditation teaching
institutions technology learning
community commitment



# Postgraduate Diploma Angiography and Vascular Diag

Angiography and Vascular Diagnosis

- » Modality: online
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- » Exams: online

