

Postgraduate Certificate

Pathophysiology of Vascular Diseases



Postgraduate Certificate Pathophysiology of Vascular Diseases

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

Website: www.techinstitute.com/us/medicine/postgraduate-certificate/pathophysiology-vascular-diseases



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01

Introduction

Pathophysiology plays a crucial role in the diagnosis and treatment of vascular diseases, since it allows a thorough understanding of their developmental stages in order to establish early detection. As a result, conditions such as deep vein thrombosis or atherosclerosis can be treated quickly. It is therefore necessary for specialists to keep up to date in this field, in order to be at the medical forefront. For this reason, TECH has created this program, which will enable the student to identify the advanced mechanisms of development of Chronic Venous Insufficiency or the latest methods to diagnose Thrombosis quickly. All this, following a 100% online methodology and without the need to neglect their professional obligations.



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The Postgraduate Certificate in Pathophysiology of Vascular Diseases will allow you to learn the latest scientific evidence regarding the mechanisms of development of Chronic Venous Insufficiency”

tech 06 | Introduction

The rigorous identification of the factors involved in the appearance of vascular diseases is a crucial aspect of medical practice. In this way, specialists can learn about the manifestations of the different conditions or their stages of development and thus detect their appearance early to ensure the physical integrity of the patient. To do this, it is necessary to identify their current risk factors or recent techniques that allow to establish their accurate assessment.

For this reason, TECH has designed this comprehensive program, which will provide professionals with the most advanced knowledge on Pathophysiology of Vascular Diseases, preventing them from lagging behind with respect to advances in the sector. Throughout this educational period, you will delve into the latest scientific evidence on the risk factors of Deep Vein Thrombosis and Pulmonary Embolism. You will also delve into the mechanisms of development of Chronic Venous Insufficiency, its cutting-edge treatments or strategies to prevent or delay the aging of the vascular system.

Because this program is developed through a revolutionary 100% online methodology, students will be able to update their knowledge without the need to make uncomfortable trips to a study center. In the same way, they will enjoy didactic contents available in a wide range of textual and multimedia formats. In this way, you will be able to choose those supports that provide you with an optimized learning adapted to your educational preferences.

This **Postgraduate Certificate in Pathophysiology of Vascular Diseases** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Clinical Analysis cases presented by experts in vascular surgery
- 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 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
- Content that is accessible from any fixed or portable device with an Internet connection

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Delve into the up-to-date pathophysiology of Deep Venous Thrombosis through this very complete TECH"

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Update yourself at your own pace and without external teaching limitations through the Relearning method”

Study from anywhere in the world and 24 hours a day thanks to the 100% online mode presented by this program.

Throughout this program, you will delve into the mechanisms of development of Pulmonary Embolism with the help of the best specialists.

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

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

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

TECH has designed this Postgraduate Certificate with the fundamental premise of providing specialists with the most up to date aspects in Pathophysiology of Vascular Diseases. Through this program, they will learn about the latest approaches to prevention of risk factors or will delve into the latest methods of diagnosis of hereditary vascular conditions. All this, preserved by the achievement of the following general and specific objectives.



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*Identify advanced methods for the early detection
of hereditary vascular diseases with this program"*



General Objectives

- Learn about the structure and function of blood vessels, both arterial and venous, and the regulation of blood flow in the microcirculation
- Delve into the epidemiology and Risk Factors
- Update knowledge on the main risk factors for the development of vascular diseases and the strategies for primary and secondary prevention
- Gain in-depth understanding of the pathophysiology of vascular diseases
- Inquire into the different diagnostic methods
- Delve into the diagnostic techniques used in vascular pathology, including clinical examination and vascular semiology, imaging methods, laboratory diagnosis and study of vascular function and hemodynamics
- Explain the different research methods and advances in vascular pathology, especially those focused on vascular pathology, including the development of new drug therapies, genetics and genomics in vascular diseases, and the development of new imaging techniques for the diagnosis and follow-up of vascular diseases





Specific Objectives

- Delve into atherosclerosis as the pathological process underlying most systemic vascular diseases, including coronary artery disease, cerebrovascular disease and peripheral vascular disease
- Delve into inflammatory vascular diseases, such as giant cell arteritis, polyarthritis nodosa, Wegener's granulomatosis, among others, and delve into the pathophysiological mechanisms underlying their development
- Delve into diabetic vasculopathy and its relationship with Diabetes Mellitus, as well as to learn about renal vascular diseases, such as renal artery stenosis or diabetic nephropathy
- Update knowledge on the identification of the different vascular diseases, the understanding of their pathophysiology and their impact on patients' health
- Delve into the clinical assessment and diagnosis of vascular diseases, including the performance of diagnostic tests and interpretation of results
- Delve into the treatments available for vascular diseases, including pharmacologic therapies, surgical interventions and other complementary therapies

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In only 150 hours, you will get the chance to become a reference professional in the field of vascular diseases”

03

Course Management

In order to maintain the excellent level that characterizes TECH programs, excellent specialists in Vascular Surgery have been selected to direct and teach this Postgraduate Certificate. These experts have extensive medical careers in prestigious hospitals, where they have held positions of relevance. Consequently, all the knowledge they will transmit to the students will retain an excellent applicability in daily practice.

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The teaching staff of this program is made up of high ranking professionals in prestigious hospitals, who will provide you with a series of knowledge completely applicable to your professional practice"

Management



Dr. Del Río Sola, María Lourdes

- Head of the Angiology and vascular surgery at Valladolids Clinical University Hospital
- Specialist in Angiology and Vascular Surgery
- European Board in Vascular Surgeon
- Permanent Correspondents of the Royal Academy of Medicine and Surgery
- Professor at Miguel de Cervantes European University
- Associate Teacher in Health Sciences, University of Valladolid



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*The 100% online delivery of
this program will enable you to
study without having to give up
your professional obligations”*

04

Structure and Content

The syllabus of this program is made up of 1 module by means of which the professional will acquire the most advanced knowledge in relation to the Physiopathology of Vascular Diseases. Likewise, each of its topics has didactic resources in formats such as complementary readings, explanatory video or self-evaluative practical exercises. In this way, through a revolutionary 100% online methodology, learning is guaranteed to be adapted to the educational and personal requirements of the student.



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Through a syllabus designed by the best specialists in Vascular Surgery, you will acquire the most advanced knowledge in Physiopathology of Vascular Diseases”

Module 1. Pathophysiology of Vascular Diseases

- 1.1. Vascular Physiopathology
 - 1.1.1. Alterations in the structure and function of blood vessels that can lead to various diseases
 - 1.1.2. Changes in the regulation of blood flow and blood pressure that may affect tissue perfusion
 - 1.1.3. Abnormal responses of vascular endothelium and vascular wall cells to different stimuli, such as inflammation, hypoxia, and stress
- 1.2. Cellular and molecular mechanisms of vascular diseases
 - 1.2.1. Endothelial dysfunction and alterations in the production and activity of vasodilator and vasoconstrictor factors
 - 1.2.2. Cell proliferation and migration of smooth muscle cells that can lead to the formation of atheromatous plaques and stenosis
 - 1.2.3. Activation of inflammatory cells and release of inflammatory mediators that may contribute to vascular injury and disease progression
- 1.3. Modifiable and Non-modifiable risk factors
 - 1.3.1. Non-modifiable risk factors: Age, Family history, Genetics
 - 1.3.2. Modifiable risk factors: Tobacco, Diet, Physical activity
 - 1.3.3. Risk factor prevention approaches: primary, secondary and tertiary
- 1.4. Primary and Secondary Vascular Injuries
 - 1.4.1. Primary Vascular Injuries: Aneurysms, arteriovenous malformations, vasculitis
 - 1.4.2. Secondary vascular Injuries: deep vein thrombosis, pulmonary embolism, atherosclerosis
 - 1.4.3. Comparison between Primary and Secondary Vascular Injuries
- 1.5. Inflammatory and repair responses in vascular diseases
 - 1.5.1. Role of inflammatory cells in vascular diseases
 - 1.5.2. Cell-cell and cell-matrix interactions in vascular inflammation
 - 1.5.3. Biomarkers of inflammation and vascular repair
- 1.6. Development of atherosclerosis
 - 1.6.1. Molecular mechanisms of atherosclerotic plaque formation
 - 1.6.2. Non-invasive assessment of atherosclerosis
 - 1.6.3. Pharmacological and non-pharmacological therapies for atherosclerosis





- 1.7. Deep venous thrombosis and pulmonary embolism
 - 1.7.1. Risk factors for deep vein thrombosis and pulmonary embolism
 - 1.7.2. Diagnostic methods for deep vein thrombosis and pulmonary embolism
 - 1.7.3. Treatment of deep vein thrombosis and pulmonary embolism
- 1.8. Pathophysiology of chronic venous insufficiency
 - 1.8.1. Mechanisms of development of chronic venous insufficiency
 - 1.8.2. Clinical Assessment of chronic venous insufficiency
 - 1.8.3. Treatment of Chronic Venous insufficiency
- 1.9. Effects of aging on the vascular system
 - 1.9.1. Physiological changes in the vascular system during aging
 - 1.9.2. Relationship between aging and vascular diseases
 - 1.9.3. Strategies to prevent or delay the aging of the vascular system
- 1.10. Role of genetics in Cellular diseases and molecular mechanisms of vascular diseases
 - 1.10.1. Genes related to vascular diseases
 - 1.10.2. Methods for diagnosis and early detection of inherited vascular diseases
 - 1.10.3. Personalized treatments based on the genetics of each patient

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Study through formats such as video or self-assessment exercises and enjoy fully effective learning”

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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. Gérvás, 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

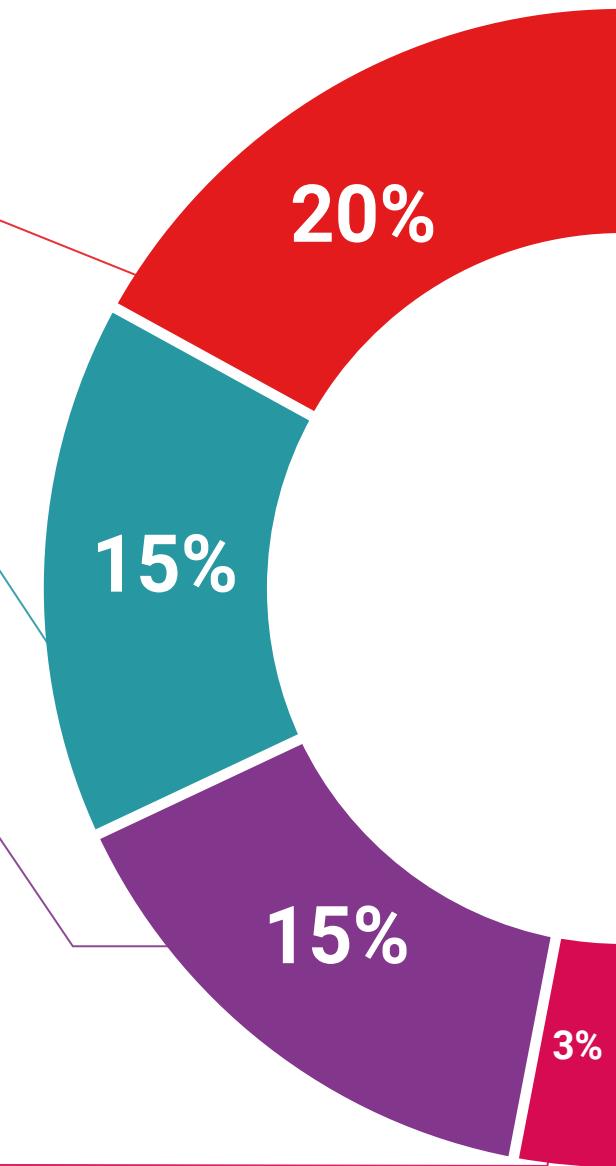
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

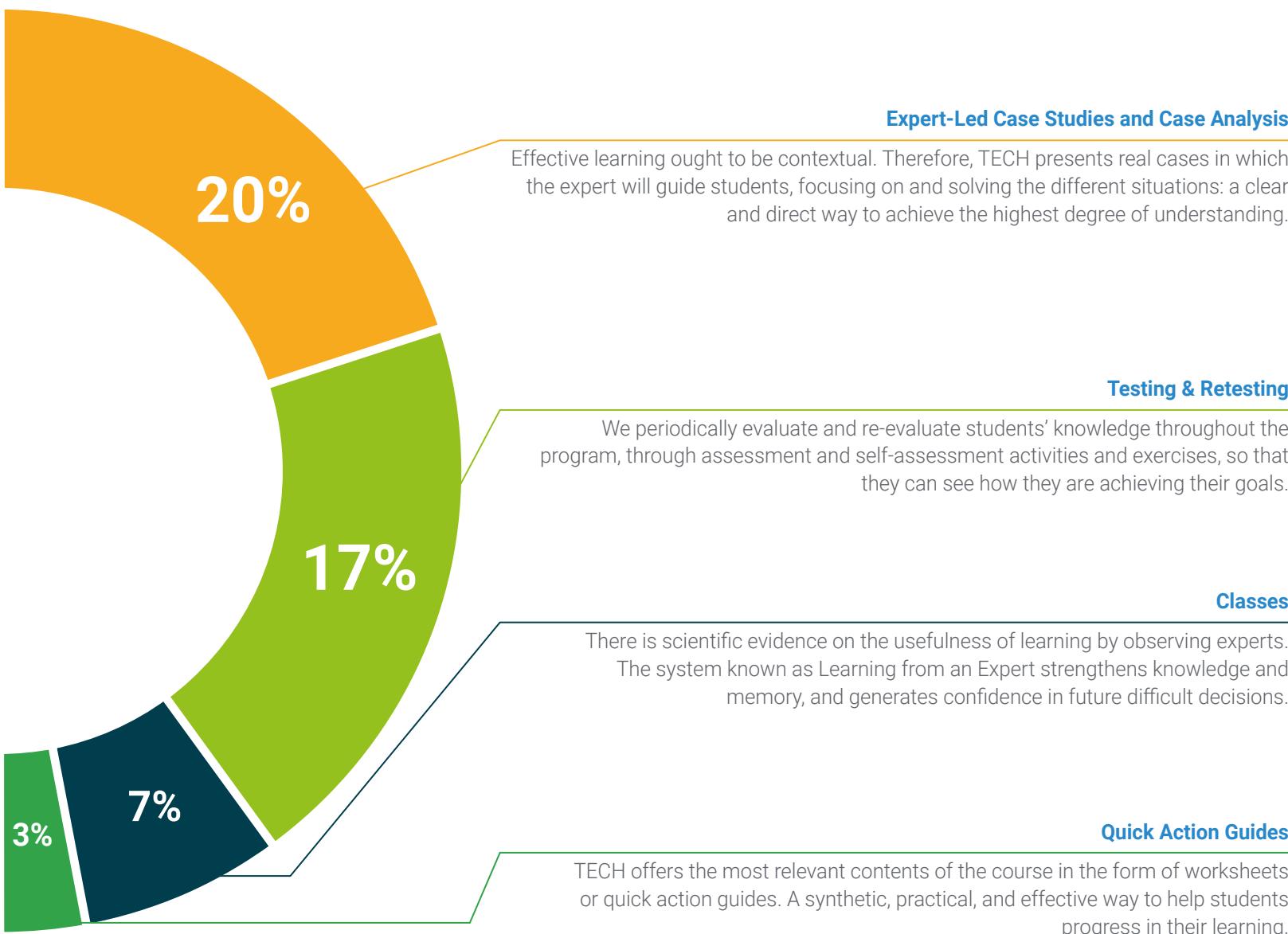
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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.





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Certificate

The Postgraduate Certificate in Pathophysiology of Vascular Diseases guarantees students, in addition to the most rigorous 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 program will allow you to obtain your **Postgraduate Certificate in Pathophysiology of Vascular Diseases** 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 Pathophysiology of Vascular Diseases**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate Pathophysiology of Vascular Diseases

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

Postgraduate Certificate

Pathophysiology of Vascular Diseases