

Postgraduate Certificate

Devices to Treat Arrhythmias (Pacemaker, ICD and Resynchronizer)





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Devices to Treat Arrhythmias (Pacemaker, ICD and Resynchronizer)

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

Website: www.techtute.com/us/medicine/postgraduate-certificate/devices-treat-arrhythmias-pacemaker-icd-resynchronizer

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01

Introduction

Devices to treat arrhythmias are varied and sometimes it can be complex for specialists to know the details of each one of them. TECH proposes with this program the study of the use of pacemakers, ICDs and resynchronizers in the treatment of cardiac pathologies, and offers the student the possibility to specialize in the methods of implantation, particularities and revision of these devices, as well as to learn about the novel techniques of physiological stimulation and their future perspective. An educational program to study online, accessible and with the most innovative pedagogical tools of the moment.





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The best program on devices to treat arrhythmias: complete, up to date and adapted to the latest developments”

There is a wide and varied range of specialized devices available for the treatment of arrhythmias. The market currently ranges from pacemakers, which can detect unusual heart rhythms, to implantable automatic defibrillators, which are also capable of treating different types of tachycardias. These and other physiological stimulation techniques make this branch of cardiology an exciting but complex field, since there is so much and so varied information that it is difficult to study in its entirety.

That is why TECH proposes and launches this Postgraduate Certificate in Devices to Treat Arrhythmias (Pacemakers, ICD and Resynchronizer), with the aim of providing the specialist the update of concepts while expanding knowledge and invest their time in a program at the forefront. This program not only has a quality syllabus designed by expert cardiologists, but also bases its teaching on the best techniques, using the most modern pedagogical tools.

In just 6 weeks, the student will learn, in depth, the techniques for implanting and monitoring the devices, their indications and operation. In addition, you will learn about physiological pacing methods, new developments and the future of the latest devices (subcutaneous ICD and leadless pacemakers) and you will be up to date on electrode extraction methods.

Following its relearning methodology, during this online program the most important concepts will be reiterated, thus facilitating learning efficiency, and allowing the student to internalize the information in a more natural way and without the need to invest hours in memorizing. In addition, the program will be available in its entirety in the virtual classroom from the first day.

This **Postgraduate Certificate in Devices to Treat Arrhythmias (Pacemaker, ICD and Resynchronizer)** 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 Cardiology
- ◆ 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



With this Postgraduate Certificate you will truly feel that you are investing in your future as a cardiac medicine professional"

“

With this program you will not have to memorize. Gradual learning, linked to its high practical content, will help you learn the concepts without even realizing it"

In six weeks with TECH, you will be up to date with the best implementation and monitoring techniques.

Learn about new developments in physiological stimulation and its future prospects.

The program's teaching staff includes professionals from sector who contribute their work experience to this 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 student will be assisted by an innovative interactive video system created by renowned and experienced experts.



02 Objectives

In addition to allowing the specialists to update their general knowledge, TECH's objective with this type of education is to offer them an opportunity to expand their information and facilitate their learning through the best and most modern academic tools. Based on this, the purpose of this program is for the graduates to complete their studies with a detailed knowledge of arrhythmia treatment devices through an experience that allows them to enjoy learning while continuing with their professional activity.



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Meeting the goals that students set for themselves when they choose TECH is a priority. That's why it offers you the best: from cutting edge content to the most modern study tools"



General Objectives

- ◆ Update general knowledge as well as the most innovative aspects of cardiological processes involving cardiac rhythm disorders
- ◆ Delve into the clinical management and indications of the different procedures performed for the diagnosis and treatment of these cardiac conditions
- ◆ Delve into the diagnosis and treatment of arrhythmias based on clinical and electrocardiographic aspects, as well as invasive techniques and electrophysiological studies
- ◆ Broaden knowledge in the operation, monitoring and implantation technique of the main implantable devices used for the treatment of arrhythmias
- ◆ Delve into the problems in cardiac rhythm disorder that can arise across the spectrum of patients
- ◆ Achieve a mastery of the rhythm disorder problems present in the various scenarios faced by the cardiologist in his or her routine clinical practice





Specific Objectives

- ◆ Review in detail the indication of pacemakers, their implantation technique, their basic operation, as well as the programming modes and other aspects of monitoring
- ◆ Review in detail the indication for ICD, as well as the particularities of the implantation technique, operation and programming/monitoring
- ◆ Know the differential aspects of the novel physiological pacing techniques, as well as their current indications and future perspectives
- ◆ Learn about other current implantable devices: wireless pacemakers and subcutaneous ICDs. Review their indications
- ◆ Update on the electrode extraction technique and its indications



Working with real case studies is another way TECH brings quality to its content"

03

Course Management

TECH has selected a group of specialists with extensive professional careers in cardiology and electrophysiology to direct and teach this Postgraduate Certificate. In this way, the graduates are offered the possibility to improve themselves, taking as an example the day to day life of an expert and their clinical cases. Their work experience, linked to their academic experience, will provide the program with a practical vision in addition to the syllabus, thus providing a unique opportunity to learn from the best professionals.





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You will have a tutor who will guide you through the Postgraduate Certificate and will be available to answer any questions you may have during the process”

International Guest Director

Awarded the “Outstanding Patient Experience Award” on multiple occasions for his excellence in patient care, Dr. Konstantinos Aronis has become a prestigious **Cardiac Electrophysiologist**. In this sense, his clinical specialty is based on the **Invasive Management of Arrhythmias** in patients suffering from **Adult Congenital Heart Disease**.

He has developed his professional work in health institutions of international reference, including the **Johns Hopkins Hospital** in Maryland or the **Beth Israel Deaconess Medical Center** in Massachusetts. In this way, he has contributed to optimizing the quality of life of numerous individuals suffering from diseases ranging from **Atrial Fibrillation** or **Ventricular Tachycardia** to **Structural Malformations of the heart**. To do so, he has employed a variety of advanced technological tools such as **Computational Modeling**, **Holder Monitors** and even **Magnetic Resonance Imaging**.

Among his main contributions, he has promoted the **Complex Ablation Program for Congenital Heart Diseases**. This has consisted in the use of **computed tomography** images to create **3D printed models** of hearts with complicated anatomies, which has made it possible to plan medical interventions with greater precision and efficiency. It has also carried out the first **intraoperative excision** for **Atrial Tachycardia**, performing the procedure in real time during cardiac surgery. This innovation made it possible to address cardiac rhythm disturbances that could not be treated conventionally without damaging nearby critical structures.

On the other hand, he balances this work with his role as a **Clinical Researcher** in Cardiac Electrophysiology. In fact, he has published numerous **scientific articles** in high-impact specialized journals. His clinical findings have contributed to the advancement of the knowledge of health professionals in areas such as **Atrial Fibrillation**, **Resynchronization** therapies or personalized **Cardiac Prototypes**.



Dr. Aronis, Konstantinos

- Physician at Johns Hopkins Hospital, Maryland, United States
- Cardiovascular Disease and Clinical Cardiac Electrophysiology Investigator at Johns Hopkins Hospital
- Translational Investigator at Beth Israel Deaconess Medical Center, Massachusetts
- Internal Medicine Residency at Boston University Medical Center, Massachusetts
- Internship in Computational Electrophysiology at the Institute of Computational Medicine at Johns Hopkins Hospital
- Doctorate in Internal Medicine, University of Patras
- Degree in Medical Sciences from the University of Patras
- American College of Cardiology
- American Heart Association
- Heart Rhythm Society

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Thanks to TECH, you will be able to learn with the best professionals in the world”

Management



Dr. Jiménez Sánchez, Diego

- Assistant specialist in Cardiology at the University Hospital El Escorial
- Attending Doctor Specialist at Unit of the Puerta De Hierro University Hospital
- Degree in Medicine and Surgery from the Autonomous University of Madrid
- Residency in the specialty of Cardiology at the Puerta de Hierro University Hospital
- Fellowship in electrophysiology at the Arrhythmia Unit of the Puerta de Hierro University Hospital
- University Master in Diagnostic and Therapeutic Cardiac Electrophysiology at San Pablo CEU University



Dr. Vázquez López-Ibor, Jorge

- Assistant Cardiology Specialist at University Hospital El Escorial
- Assistant Cardiology Specialist at the Heart Failure Unit of the Puerta de Hierro Hospital
- Degree in Medicine and Surgery from the Complutense University of Madrid
- Residency in the specialty of Cardiology at the Puerta de Hierro University Hospital
- Theoretical and practical Master in Critical and Advanced Heart Failure (MICCA) at the Gregorio Marañón Hospital
- Theoretical and practical training in Cardiovascular Research at the National Center for Cardiovascular Research (CNIC)
- Fellowship in Advanced Heart Failure, Heart Transplantation and Pulmonary Hypertension at the Puerta de Hierro University Hospital



Dr. Castro Urda, Víctor

- ◆ Assistant Specialist in the Arrhythmia Unit of the Cardiology Service of the Puerta de Hierro Hospital
- ◆ Degree in Medicine and Surgery from the Complutense University of Madrid
- ◆ Residency in the specialty of Cardiology at the Puerta de Hierro University Hospital
- ◆ Internship at the Electrophysiology and Cardiology Department of the Hospital UZ Brussel, Belgium
- ◆ Master in Diagnostic and Therapeutic Cardiac Electrophysiology at the Complutense University of Madrid

04

Structure and Content

The professional judgment of the teaching staff has been taken into account in developing the content of this program. For this reason, the information that makes up this program is the best and most up to date, rigorously selected in order to offer the student the possibility of knowing in detail the best physiological stimulation techniques and their devices. The program is also designed in such a way that the most important concepts will be reiterated throughout the course, facilitating learning and making it more effective.





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A complete program with which to update concepts and expand knowledge without having to invest large amounts of time"

Module 1. Devices (Pacemaker, ICD and Resynchronizer)

- 1.1. Pacemaker
 - 1.1.1. Operation of a Pacemaker
 - 1.1.2. Indications for Pacemaker Implantation
- 1.2. Pacemaker Implantation Technique
 - 1.2.1. Venous Canalization
 - 1.2.2. Surgical Pocket Creation
 - 1.2.3. Ventricular Electrode Implantation
 - 1.2.4. Atrial Electrode Implantation
- 1.3. Basic Pacemaker Programming
 - 1.3.1. Programming at Discharge After Implantation
 - 1.3.2. Monitoring Protocol in the Consultation Room
- 1.4. ICD
 - 1.4.1. Operation of an ICD
 - 1.4.2. Indications for ICD Implantation
- 1.5. ICD II
 - 1.5.1. ICD Implantation Technique. Peculiarities with Respect to Pacemaker.
 - 1.5.2. Programming at Discharge After Implantation
 - 1.5.3. Monitoring Protocol in the Consultation Room
- 1.6. Resynchronization Therapy
 - 1.6.1. Theoretical Basis
 - 1.6.2. Indications for Cardiac Resynchronization Device Implantation
- 1.7. Resynchronization Therapy II
 - 1.7.1. CRS Implantation Technique. Peculiarities with Respect to Other Devices
 - 1.7.2. Programming at Discharge After Implantation
 - 1.7.3. Monitoring Protocol in the Consultation Room



- 1.8. Physiological Stimulation
 - 1.8.1. Hisian Stimulation
 - 1.8.2. Left Bundle Branch Stimulation
- 1.9. Other Implantable Devices
 - 1.9.1. Wireless Pacemakers
 - 1.9.2. Subcutaneous ICD
- 1.10. Electrode Removal
 - 1.10.1. Indications for Electrode Extraction
 - 1.10.2. Extraction Procedure



Knowing in detail the present situation of devices to treat arrhythmias will make you a better professional in the future"

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.





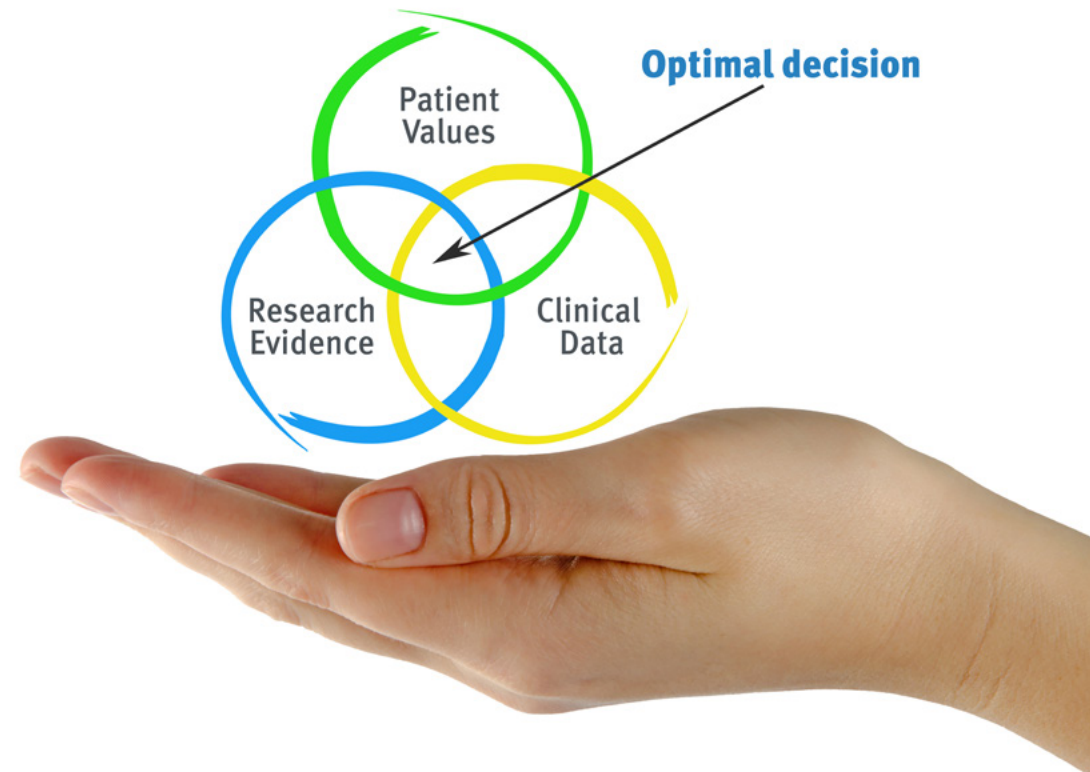
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Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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. 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.

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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 Devices to Treat Arrhythmias (Pacemaker, ICD and Resynchronizer) 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 private qualification will allow you to obtain a **Postgraduate Certificate in Devices to Treat Arrhythmias (Pacemaker, ICD and Resynchronizer)** 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 Devices to Treat Arrhythmias (Pacemaker, ICD and Resynchronizer)**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





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