Postgraduate Certificate
Biodevices for Diagnosis and Action

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Postgraduate Certificate

Biodevices for Diagnosis and Action

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

Website: **www.techtitute.com/us/medicine/postgraduate-certificate/bio-devices-diagnosis-action**

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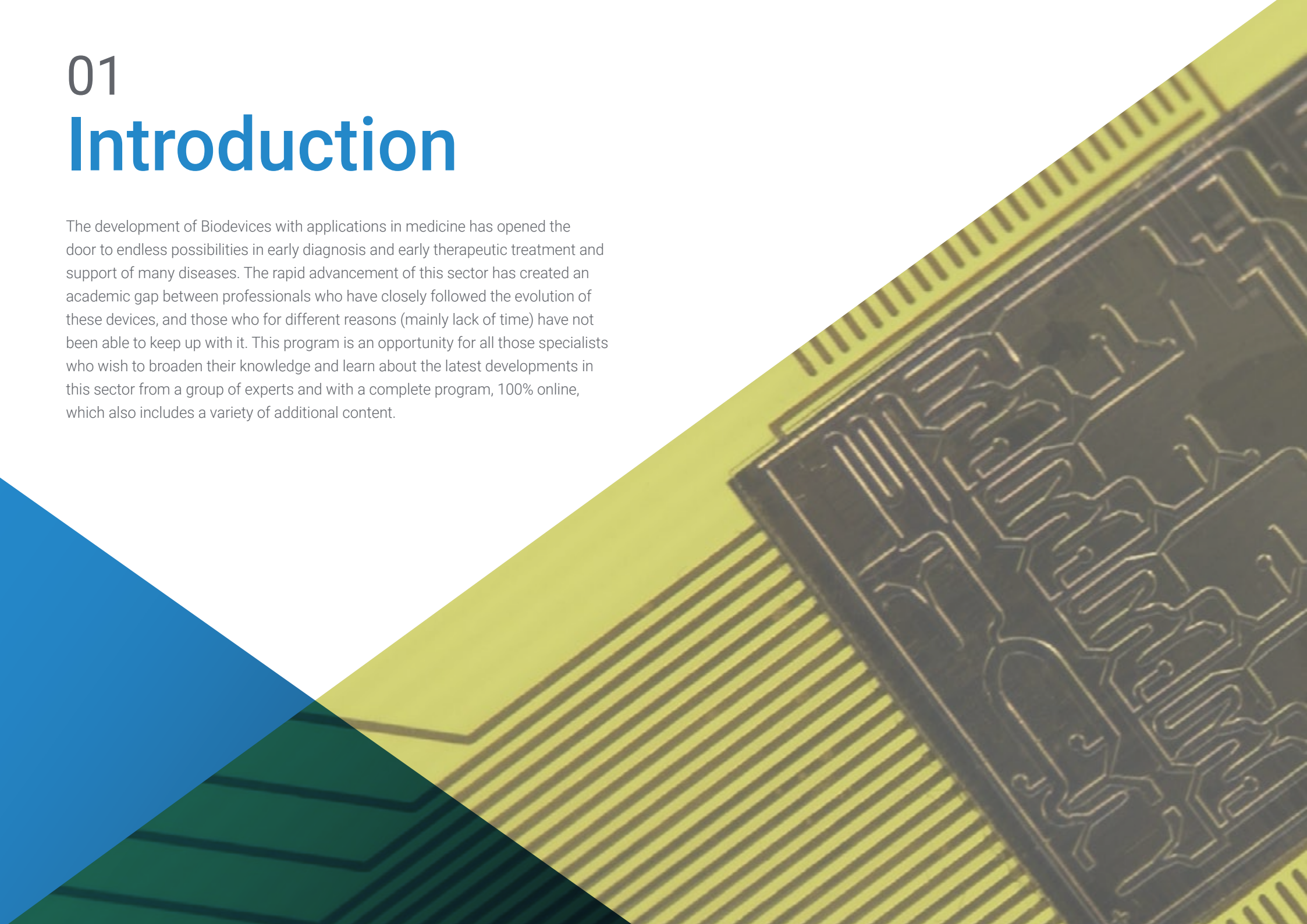
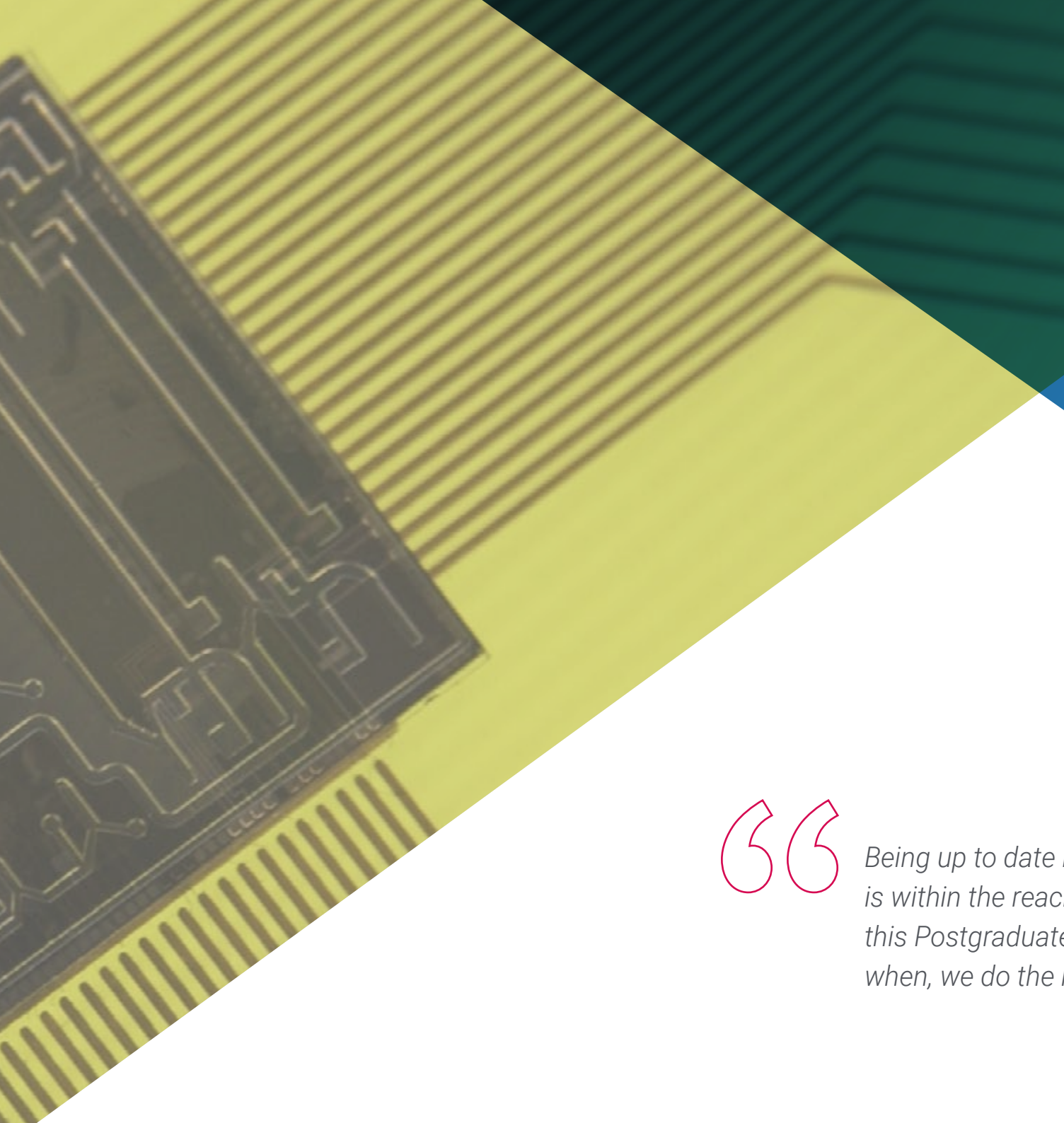
01

Introduction

The development of Biodevices with applications in medicine has opened the door to endless possibilities in early diagnosis and early therapeutic treatment and support of many diseases. The rapid advancement of this sector has created an academic gap between professionals who have closely followed the evolution of these devices, and those who for different reasons (mainly lack of time) have not been able to keep up with it. This program is an opportunity for all those specialists who wish to broaden their knowledge and learn about the latest developments in this sector from a group of experts and with a complete program, 100% online, which also includes a variety of additional content.





Being up to date in diagnostic Biodevices is within the reach of any specialist with this Postgraduate Certificate. You decide when, we do the rest"

The possibilities that have arisen in medicine in the development of increasingly sophisticated and useful bio-devices are enormous. Today we can find instruments that allow the monitoring of patients with diabetes, obesity or hypertension, as well as sensors applied to everyday objects that allow early diagnosis of breast cancer. These devices benefit the patient, not only in terms of self-monitoring, but also give them the opportunity to increase the success of the treatments they are undergoing. For their part, medical specialists have more tools (and are increasingly prepared and effective) to treat their patients, saving them from long waits that are often devastating to their health.

TECH is aware that, on occasions, the agenda of many doctors prevents them from combining their work life with their academic life, making it impossible for them to keep up to date with the most innovative techniques and concepts. In order to facilitate this task, this Postgraduate Certificate in Biodevices for Diagnosis and Action is intended to generate specialized knowledge on the design and operation of medical devices and the technologies used in this field.

The specialist will have all the content in the virtual classroom from the first day and will be able to access it at any time. You will have the best program, designed by a group of experts in the field who, in addition to guiding you, will be available to answer any questions that may arise during the program.

This **Postgraduate Certificate in Biodevices for Diagnosis and Action** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- Practical cases presented by experts in Biomedicine
- 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

With this program you will delve into the typology of biosensors: optical, physical, electrochemical and acoustic"

Access the virtual classroom at any time. Organize your time, download the content and view the syllabus on any device from wherever you want"

With this program you will focus on the importance of diagnostic and surgical biodevices.

Part of the syllabus of this Postgraduate Certificate will be exclusively oriented to the study of practical cases.

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 knowledge 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 throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

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Objectives

Knowing that the subject of Biodevices is in constant evolution, the objective of this program is to compile in a complete program, the most relevant information, necessary to develop in-depth knowledge. In addition, the purpose of this and all the programs offered by TECH is to serve as a tool to improve your professional career. To do so, we use the best educational instruments and the most effective teaching methodology of the moment.

If your goal is to update your knowledge without investing extra hours and with the best content of the moment, this program is perfect for you"

General Objectives

- Generate specialized knowledge on the main types of biomedical signals and their uses
- Develop the physical and mathematical knowledge underlying biomedical signals
- Fundamentals of the principles governing signal analysis and processing systems
- Analyze the main applications, trends and lines of research and development in the field of biomedical signals
- Develop expertise in classical mechanics and fluid mechanics
- Analyze the general functioning of the motor system and its biological mechanisms
- Develop models and techniques for the design and prototyping of interfaces based on design methodologies and their evaluation
- Provide the student with critical skills and tools for interface assessment
- Explore the interfaces used in pioneering technology in the biomedical sector
- Analyze the fundamentals of medical imaging acquisition, inferring its social impact
- Develop specialized knowledge about the operation of the different imaging techniques, understanding the physics behind each modality
- Identify the usefulness of each method in relation to its characteristic clinical applications
- Investigate post-processing and management of acquired images
- Use and design biomedical information management systems
- Analyze current digital health applications and design biomedical applications in a hospital setting or clinical center

Specific Objectives

- Generate specialized knowledge in the conception, design, implementation and operation of medical devices through the technologies used in this field
- Determine the main technologies for rapid prototyping
- Discover the main fields of application: diagnostic, therapeutic and support.
- Establish the different types of biosensors and their use for each diagnostic case
- Deepen the understanding of the physical/electrochemical functioning of the different types of biosensors
- Examine the importance of biosensors in modern medicine

Improve your skills and invest in a program that will allow you to hone your skills and thrive in your career"

03

Course Management

This Postgraduate Certificate will be managed by experts, who, like their teaching staff, have years of experience in the sector. They are a group of professionals committed to teaching, characterized by an exceptional human quality, who will ensure that the specialist meets all their objectives. That is why they are at your disposal to resolve any doubts that may arise during the academic process, as well as to discuss any topic related to the program that the graduate considers important.

The teaching staff will present real cases with which the specialist will be able to put into practice their skills and the content covered during the program"

International Guest Director

Awarded by the Academy of Radiology Research for his contribution to the understanding of this area of science, Dr. Zahi A Fayad is considered a prestigious Biomedical Engineer. In this sense, most of his line of research has focused on both the detection and prevention of Cardiovascular Diseases. In this way, he has made multiple contributions in the field of Multimodal Biomedical Imaging, promoting the correct use of technological tools such as Magnetic Resonance Imaging or Positron Emission Computed Tomography in the health community.

In addition, he has an extensive professional background that has led him to occupy relevant positions such as the Director of the Institute of Biomedical Engineering and Imaging at Mount Sinai Medical Center, located in New York. It should be noted that he combines this work with his facet as a Research Scientist at the National Institutes of Health of the United States government. He has written more than 500 exhaustive clinical articles on subjects such as drug development, the integration of the most avant-garde techniques of Multimodal Cardiovascular Imaging in clinical practice or non-invasive in vivo methods in clinical trials for the development of new therapies to treat Atherosclerosis. Thanks to this, his work has facilitated the understanding of the effects of Stress on the immune system and Cardiac Pathologies significantly.

On the other hand, this specialist leads 4 multicenter clinical trials funded by the US pharmaceutical industry for the creation of new cardiovascular drugs. His objective is to improve therapeutic efficacy in conditions such as Hypertension, Heart Failure or Stroke. At the same time, it develops prevention strategies to raise public awareness of the importance of maintaining healthy lifestyle habits to promote optimal cardiac health.

Dr. A Fayad, Zahi

- Director of the Institute for Biomedical Engineering and Imaging at Mount Sinai Medical Center, New York
- Chairman of the Scientific Advisory Board of the National Institute of Health and Medical Research at the European Hospital Pompidou AP-HP in Paris, France
- Principal Investigator at Women's Hospital in Texas, United States
- Associate Editor of the "Journal of the American College of Cardiology"
- Ph.D. in Bioengineering from the University of Pennsylvania
- B.S. in Electrical Engineering from Bradley University
- Founding member of the Scientific Review Center of the National Institutes of Health of the United States government

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

Management

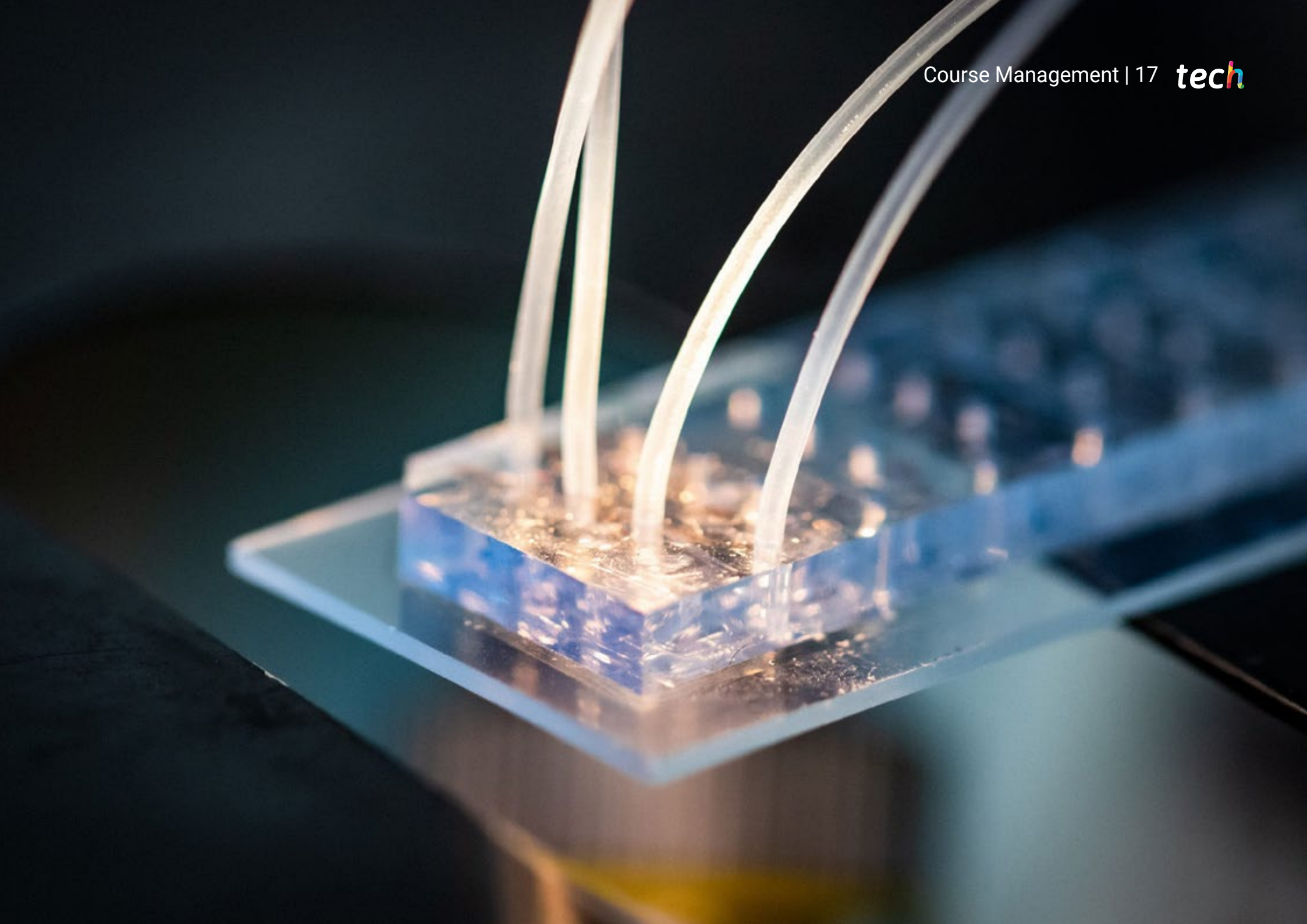
Mr. Ruiz Díez, Carlos

- Researcher at the National Microelectronics Center of the CSIC
- Researcher. Composting Research Group of the Department of Chemical, Biological and Environmental Engineering of the UAB
- Founder and product development at NoTime Ecobrand, a fashion and recycling brand
- Development cooperation project manager for the NGO Future Child Africa in Zimbabwe
- Graduate in Industrial Technologies Engineering from Pontificia University de Comillas ICAI
- Master's Degree in Biological and Environmental Engineering from the Autonomous University of Barcelona
- Master's Degree in Environmental Management from Spanish Open University

Professors

Mr. Somolinos Simón, Francisco Javier

- Biomedical Engineering Researcher at the Bioengineering and Telemedicine Group of the Polytechnic University of Madrid
- Graduate in Biomedical Engineering from the Polytechnic University of Madrid
- Master's Degree in Management and Development of Biomedical Technologies from Carlos III University of Madrid
- PhD in Biomedical Engineering



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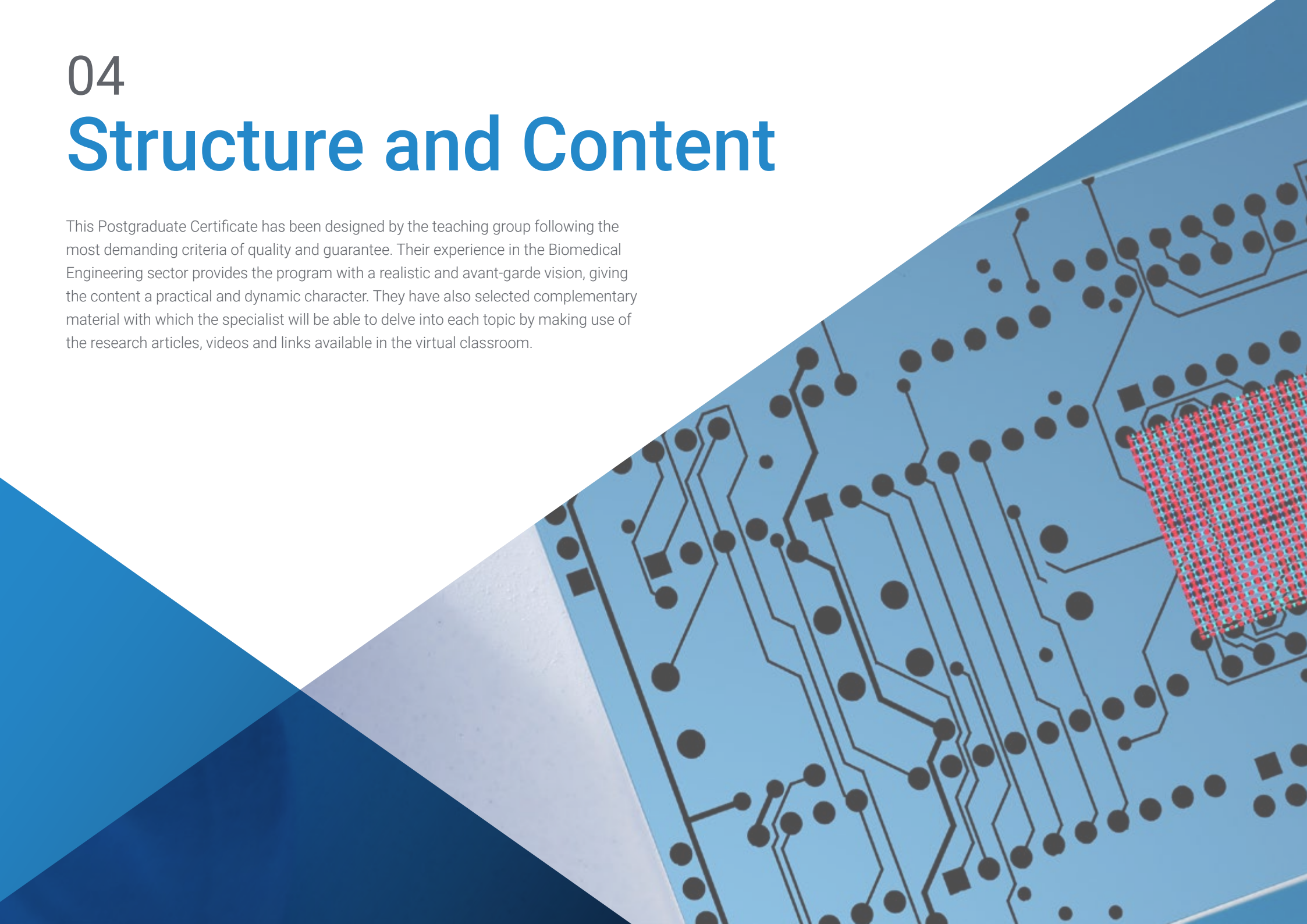
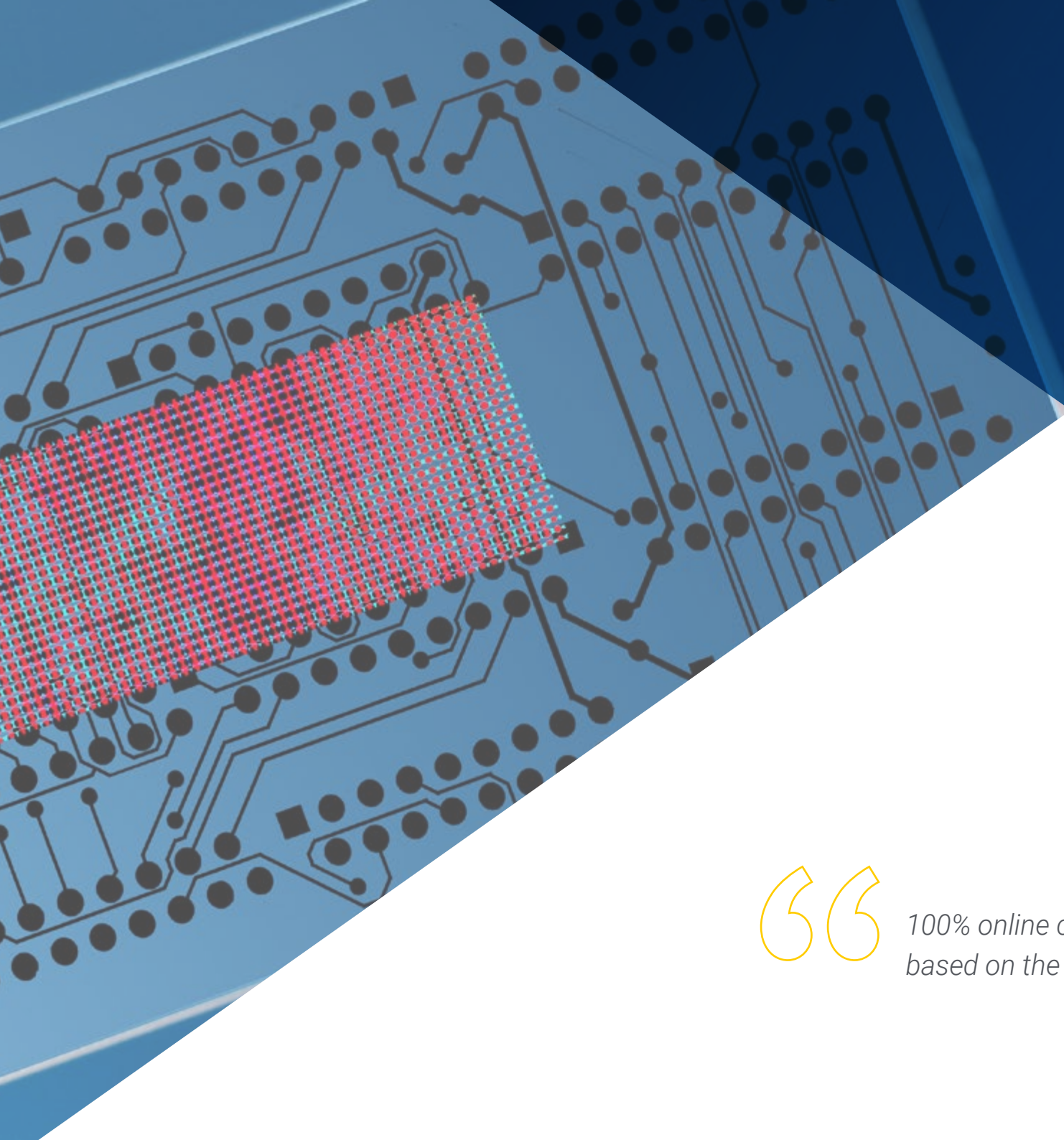
Structure and Content

This Postgraduate Certificate has been designed by the teaching group following the most demanding criteria of quality and guarantee. Their experience in the Biomedical Engineering sector provides the program with a realistic and avant-garde vision, giving the content a practical and dynamic character. They have also selected complementary material with which the specialist will be able to delve into each topic by making use of the research articles, videos and links available in the virtual classroom.





100% online content, quality and based on the latest research"

Module 1. Biomedical Technologies: Biodevices and Biosensors

1.1. Medical Devices
- 1.1.1. Product Development Methodology
- 1.1.2. Innovation and creativity
- 1.1.3. CAD Technologies

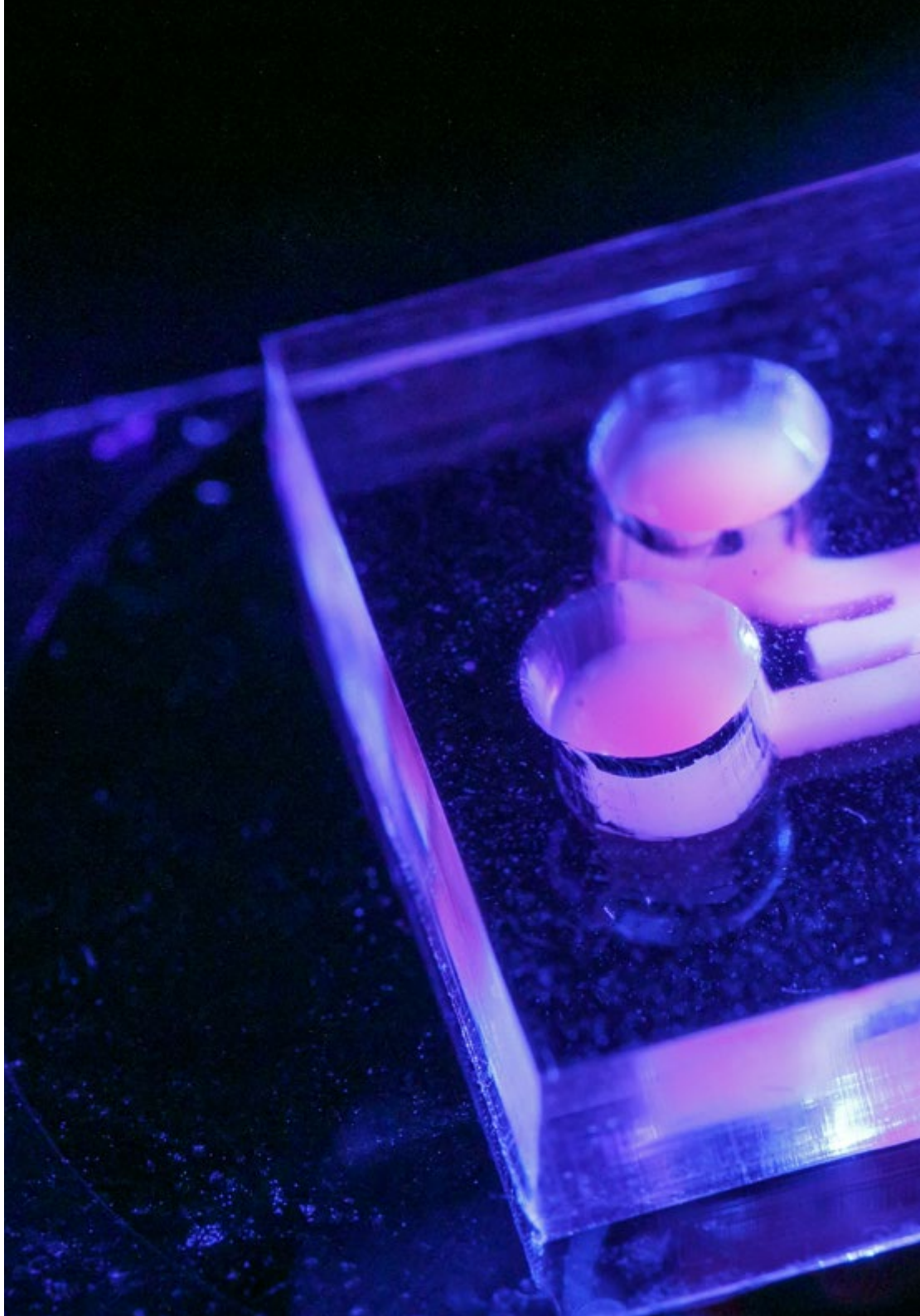
1.2. Nanotechnology
- 1.2.1. Medical Nanotechnology
- 1.2.2. Nanostructured Materials
- 1.2.3. Nano-Biomedical Engineering

1.3. Micro and Nanofabrication
- 1.3.1. Design of Micro and Nano Products
- 1.3.2. Techniques
- 1.3.3. Tools for Manufacturing

1.4. Prototypes
- 1.4.1. Additive Manufacturing
- 1.4.2. Rapid Prototyping
- 1.4.3. Classification
- 1.4.4. Applications
- 1.4.5. Study Cases
- 1.4.6. Conclusions

1.5. Diagnostic and Surgical Devices
- 1.5.1. Development of Diagnostic Methods
- 1.5.2. Surgical Planning
- 1.5.3. Biomodels and Instruments Made with 3D Printing
- 1.5.4. Device-Assisted Surgery

1.6. Biomechanic Devices
- 1.6.1. Prosthetics
- 1.6.2. Intelligent Materials
- 1.6.3. Orthotics



1.7. Biosensors
- 1.7.1. The Biosensor
- 1.7.2. Sensing and Transduction
- 1.7.3. Medical Instrumentation for Biosensors

1.8. Types of Biosensors: Optic Sensors
- 1.8.1. Reflectometry
- 1.8.2. Interferometry and Polarimetry
- 1.8.3. Evanescent Field
- 1.8.4. Fiber Optic Probes and Guides

1.9. Types of Biosensors (II): Physical, Electrochemical and Acoustic Sensors
- 1.9.1. Physical Sensors
- 1.9.2. Electrochemical Sensors
- 1.9.3. Acoustic Sensors

1.10. Integrated Systems
- 1.10.1. Lab-On-A-Chip
- 1.10.2. Microfluids
- 1.10.3. Medical Applications

This Postgraduate Certificate will give you the guidelines and materials you need to become a professional in Biodevices for Diagnosis and Action"

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.

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.

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:

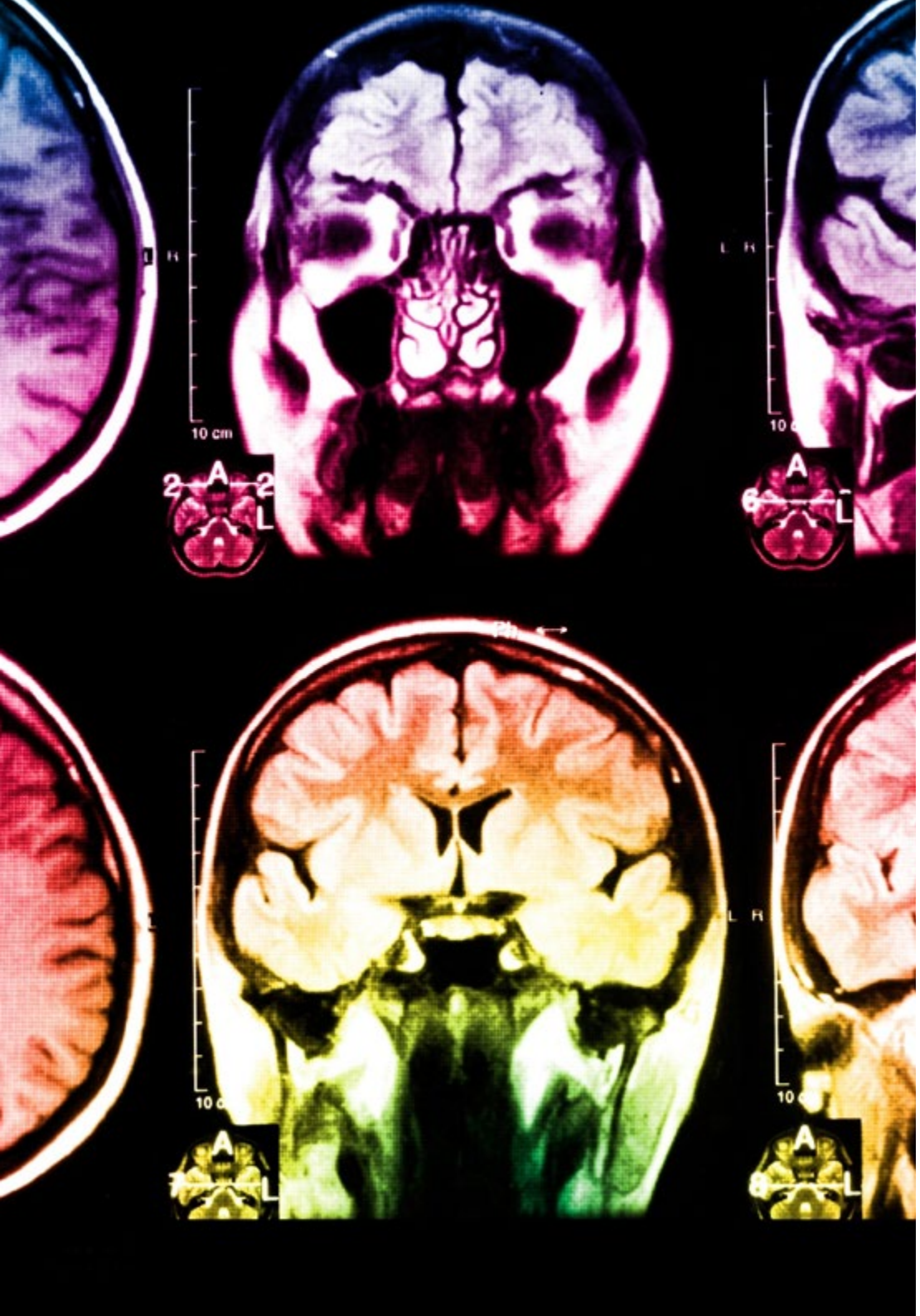
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better 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.

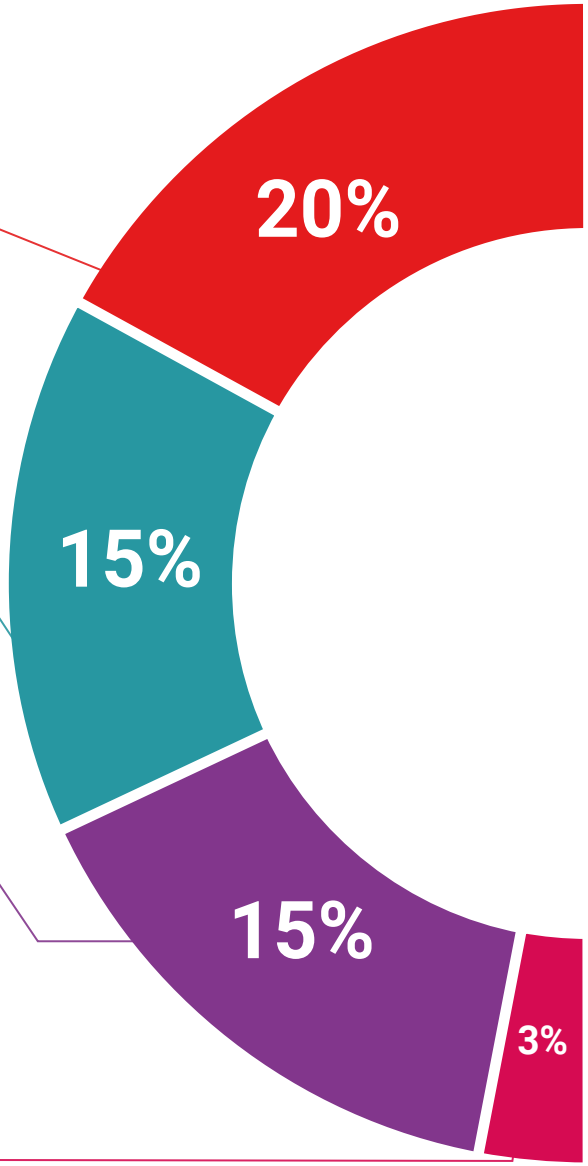
Interactive Summaries

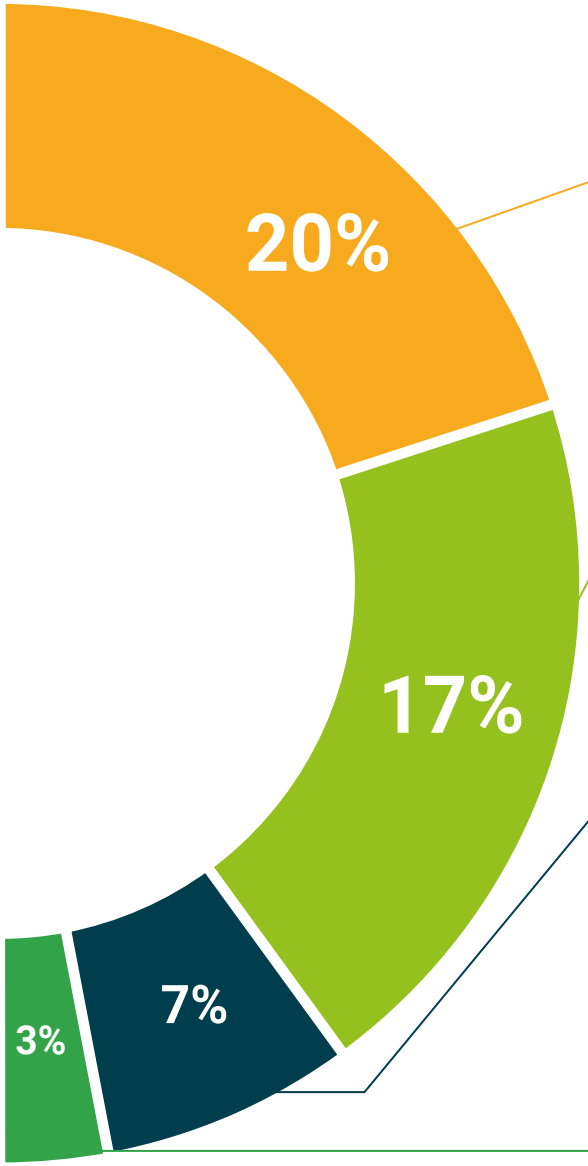
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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 Biodevices for Diagnosis and Action guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Global University.

Successfully complete this program and receive your university degree without travel or laborious paperwork"

This program will allow you to obtain your **Postgraduate Certificate in Biodevices for Diagnosis and Action** 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.

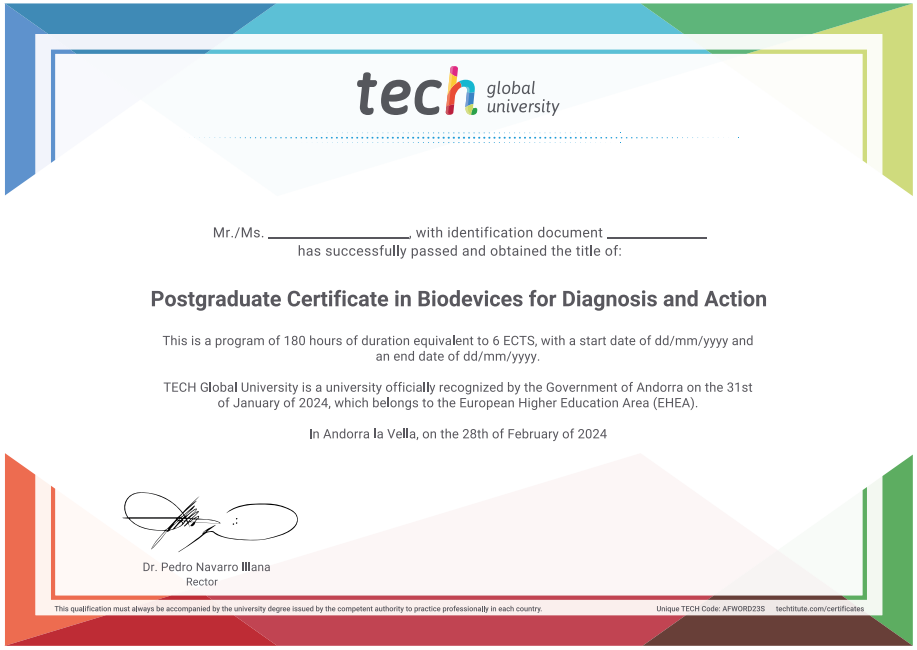
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Biodevices for Diagnosis and Action**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**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Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Biodevices for Diagnosis and Action

This is a program of 180 hours of duration equivalent to 6 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

Dr. Pedro Navarro Illana
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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