

Postgraduate Certificate Tissue Engineering and Regenerative Medicine



Postgraduate Certificate Tissue Engineering and Regenerative Medicine

- » 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/tissue-engineering-regenerative-medicine

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 16

05

Study Methodology

p. 20

06

Certificate

p. 30

01

Introduction

Regenerative and tissue medicine has undergone a major development in recent years with the creation of new biomaterials and its results are increasingly promising for patients. Within this context, specialists in this field are working in a field that is not only very broad, but will continue to grow over the years. In order to offer you a course with which you can keep abreast of the latest developments, this program was developed on the basis of the most modern research and postulates and following the strictest scientific criteria and quality. This is a 100% online program, with the best content, real clinical cases and designed by specialists in the world of biomedicine.



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Tissue regeneration is the present and future of medicine in different specialties This Postgraduate Certificate includes the most modern and effective advances to date"

The advances that have been made as a result of the evolution of tissue engineering and regenerative medicine are enormous. Although today many of the procedures are experimental and very expensive, this engineering, in collaboration with medical judgment, has exponentially improved the lives of millions of patients. The possibilities arising from skin and cartilage grafts, cardiac therapies or, to a lesser extent, the implementation of organs as supplementary bladders, are growing and becoming more effective.

This engineering is applicable in different branches of medicine, from oncology, dermatology or ophthalmology, among others, to surgery itself. For this reason, it is becoming increasingly common to find medical professionals interested in this subject, since based on these techniques it is possible to improve the quality of life of a patient and even save their life.

That is why this Postgraduate Certificate was created, based on the most modern research and advances. Led by a group of biomedical professionals, this program includes the most important aspects of tissue engineering and regenerative medicine, from histology, through tissue regeneration and the potential of stem and embryonic cells to gene therapy, corneal regeneration and skin grafts for major burns. In addition, it will delve into the different biomedical applications of tissue engineered products.

All this through a 100% online methodology based on the most innovative pedagogical techniques. The graduate will have the best and most updated content, as well as complementary material that will help them contextualize the concepts. All this tutored by professionals in the sector who will be at your disposal to resolve any doubts that may arise during the course.

This **Postgraduate Certificate in Tissue Engineering and Regenerative Medicine** contains the most complete and up-to-date Educational program on the market. The most important features include:

- ♦ Practical cases presented by experts in Biomedicine
- ♦ The graphic, schematic, and eminently 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



A program that delves into the methods of tissue and cartilage procurement, therapies, bone replacement and grafting"

“

Increase your chances of success in treating conditions where biomedicine offers you proven alternatives that are more effective than traditional techniques”

We provide you with the best content, but you set the schedule

Differentiate yourself from the rest with this Postgraduate Certificate and add professionalism and prestige to your professional resume

The program's teaching staff includes professionals from the sector who contribute their work experience to this training 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 training programmed to train 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

Taking into account the value it is gaining in the different branches of medicine, TECH has set out, with this Postgraduate Certificate, the objective that the specialist knows the key aspects that allow him to start in the world of biomedicine, and those who already have a solid foundation can continue to expand their knowledge with the best content and with a lot of supplementary material. A unique opportunity to update concepts and to keep abreast of the future of medicine.



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Biomedicine treatments are the future of many specialties Why not start now to strengthen and expand your knowledge with the best online university in the world?”



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 on histology and functioning of the cellular environment
- ♦ Review the current status of tissue engineering and regenerative medicine
- ♦ Address the main challenges facing tissue engineering
- ♦ Present the most promising techniques and the future of tissue engineering
- ♦ Develop the main trends of the future of regenerative medicine
- ♦ Analyze the regulation of tissue engineered products
- ♦ Examine the interaction of biomaterials with the cellular environment and the complexity of this process

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You will find, in this six-week Postgraduate Certificate, a broad summary of the generic concepts derived from biomedicine and complete and deep topics dedicated to the most relevant aspects”

03

Course Management

For this Postgraduate Certificate, TECH has selected a teaching staff specialized in engineering biology with extensive professional experience, highlighting their active participation in research projects. A group of experts in the field who will make their time available to the graduate to resolve doubts or to discuss issues arising from the syllabus. In addition, they will provide the program with real case studies that will allow the application of the knowledge acquired on the most important biomedical advances.



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A syllabus designed and created by experts in the sector, who bring their professional commitment and experience to ensure the best results after the course"

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

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

Management



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 Universidad Pontificia de Comillas ICAI.
- ♦ Master's Degree in Biological and Environmental Engineering from the Autonomous University of Barcelona.
- ♦ Master's Degree in Environmental Management from the Universidad Española a Distancia (Spanish Open University)

Professors

Rubio Rey, Javier

- ♦ Research Trainee in the Parkinson's disease project: Investigating the cofilin-1 and alpha-synuclein protein interaction under the direction of Dr. Richard Parsons at Kings College London
- ♦ Degree in Pharmacy from CEU San Pablo University.
- ♦ Degree in Biotechnology from CEU San Pablo University.
- ♦ Double Degree in Pharmacy and Biotechnology.



04

Structure and Content

In order to offer the best academic experience, TECH offers the specialist the possibility of taking this Postgraduate Certificate from wherever they want without having to give up the best content. With a 100% online program, the graduate will be able to distribute the teaching load according to their own schedule, thus allowing them to continue with their daily activity in the practice. In addition, the relearning methodology with which this university develops its programs will favor the results, facilitating the acquisition of concepts without the need to memorize and allowing you to save time.



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You will have at your disposal a variety of complementary material that will allow you to broaden the concepts as much as you wish"

Module 1. Tissue Engineering

- 1.1. Histology
 - 1.1.1. Cellular Organization in Higher Structures: Tissues and Organs
 - 1.1.2. Cellular Cycle Tissue Regeneration
 - 1.1.3. Regulation: Interaction With the Extracellular Matrix
 - 1.1.4. Importance of Histology in Tissue Engineering
- 1.2. Tissue Engineering
 - 1.2.1. Tissue Engineering
 - 1.2.2. Scaffolding
 - 1.2.2.1. Properties
 - 1.2.2.2. The Ideal Scaffolding
 - 1.2.3. Biomaterials for Tissue Engineering
 - 1.2.4. Bioactive Materials
 - 1.2.5. Cells
- 1.3. Stem Cells
 - 1.3.1. Stem Cells
 - 1.3.1.1. Potentiality
 - 1.3.1.2. Tests to Evaluate Potentiality
 - 1.3.2. Regulation: Niche
 - 1.3.3. Types of Stem Cells
 - 1.3.3.1. Embryonic
 - 1.3.3.2. IPS
 - 1.3.3.3. Adult Stem Cells
- 1.4. Nanoparticles
 - 1.4.1. Nanomedicine Nanoparticles
 - 1.4.2. Types of Nanoparticles
 - 1.4.3. Methods of Obtaining
 - 1.4.4. Bionanomaterials in Tissue Engineering
- 1.5. Genetic Therapy
 - 1.5.1. Genetic Therapy
 - 1.5.2. Uses: Gene Supplementation, Cell Replacement, Cellular Reprogramming
 - 1.5.3. Vectors for the Introduction of Genetic Material
 - 1.5.3.1. Viral Vectors
- 1.6. Biomedical Applications of Tissue Engineering Products Regeneration, Grafts and Replacements
 - 1.6.1. *Cell Sheet Engineering*
 - 1.6.2. Cartilage Regeneration: Joint Repair
 - 1.6.3. Corneal Regeneration
 - 1.6.4. Skin Grafting for Major Burn Injuries
 - 1.6.5. Oncology
 - 1.6.6. Bone Replacement
- 1.7. Biomedical Applications of Tissue Engineering Products Circulatory, Respiratory and Reproductive System
 - 1.7.1. Cardiac Tissue Engineering
 - 1.7.2. Hepatic Tissue Engineering
 - 1.7.3. Lung Tissue Engineering
 - 1.7.4. Reproductive Organs and Tissue Engineering



- 1.8. Quality Control and Biosecurity
 - 1.8.1. NCF Applied to Advanced Therapy Drugs
 - 1.8.2. Quality Control
 - 1.8.3. Aseptic Process: Viral and Microbiological Safety
 - 1.8.4. Cell Production Unit: Characteristics and Design
- 1.9. Legislation and Regulation
 - 1.9.1. Current Legislation
 - 1.9.2. Authorization
 - 1.9.3. Regulation of Advanced Therapies
- 1.10. Future Perspectives
 - 1.10.1. Current Status of Tissue Engineering
 - 1.10.2. Clinical Needs
 - 1.10.3. Main Challenges at Present
 - 1.10.4. Focus and Future Challenges

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*Take advantage of this opportunity
and invest in improving your
professional future in medicine,
your patients will thank you for it”*

05 Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”

The student: the priority of all TECH programs

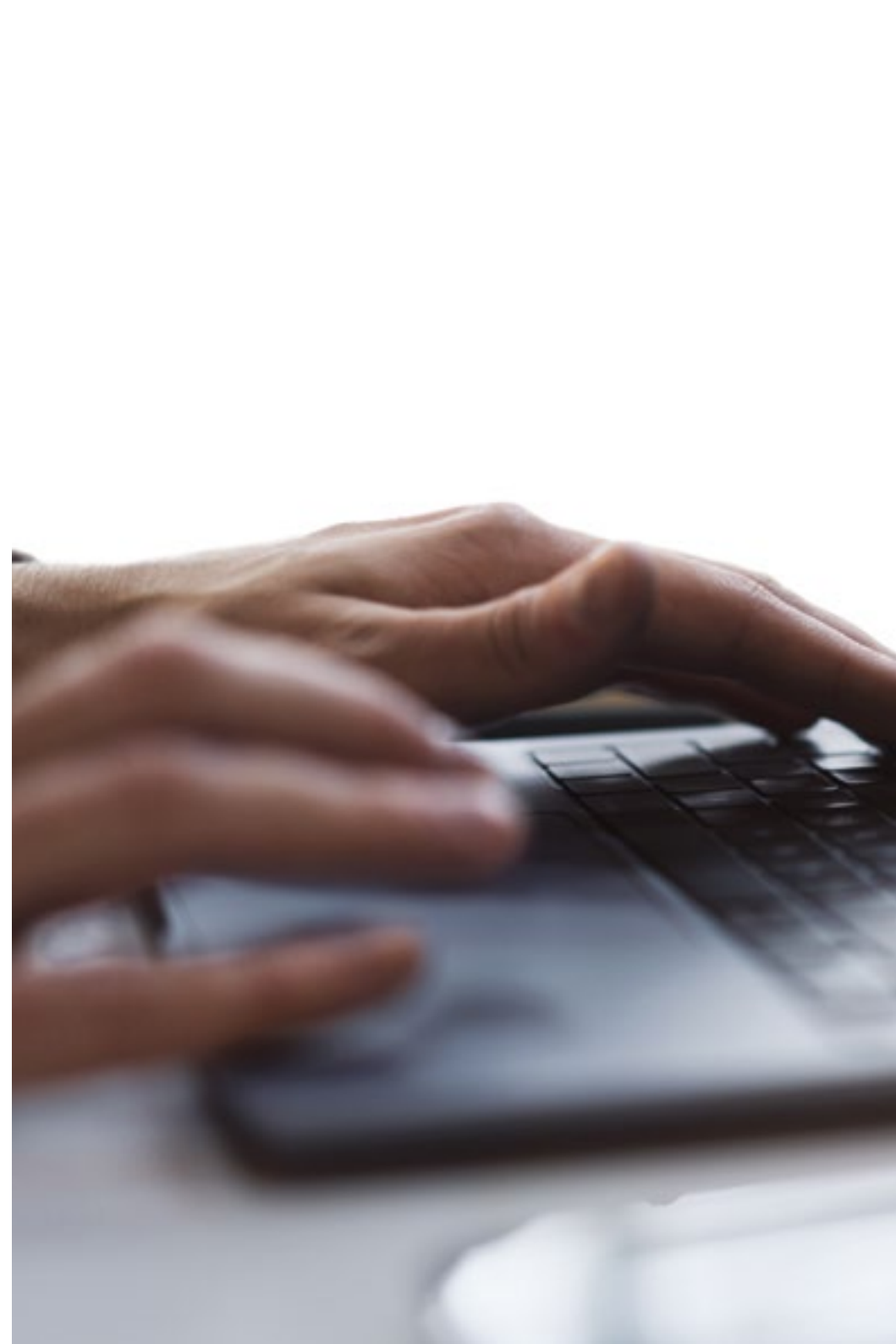
In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes
(which you might not be able to attend)”*



The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

“*TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want*”

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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.



A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”

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 assess 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.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.



06 Certificate

The Postgraduate Certificate in Tissue Engineering and Regenerative Medicine guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Certificate in Tissue Engineering and Regenerative Medicine** 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.

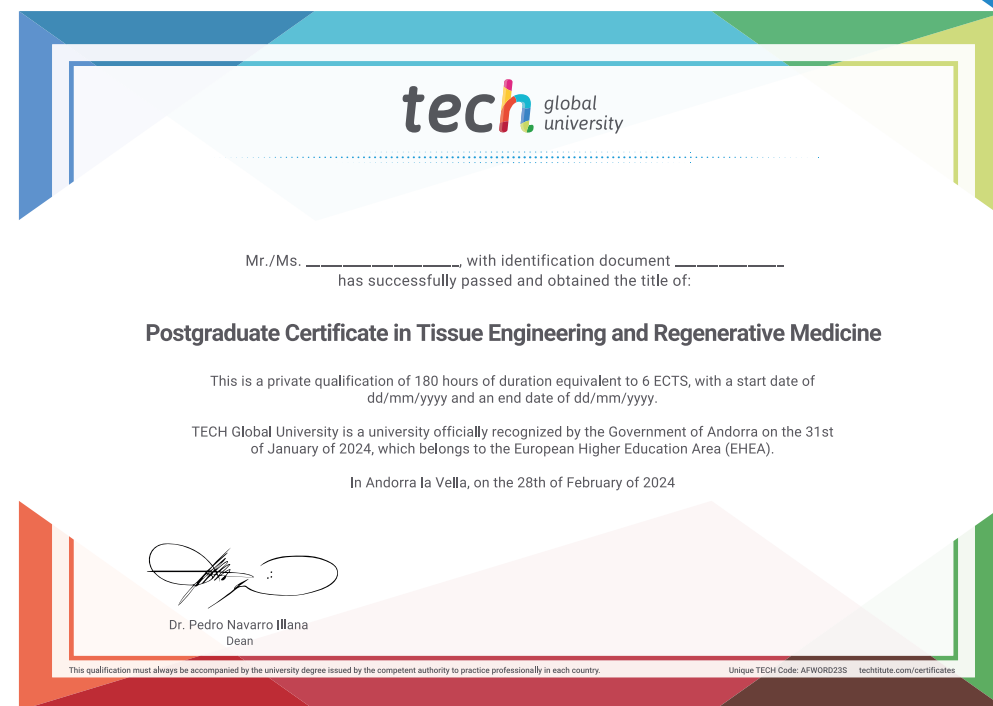
This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Tissue Engineering and Regenerative Medicine**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present quality
development languages
virtual classroom



Postgraduate Certificate Tissue Engineering and Regenerative Medicine

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Postgraduate Certificate

Tissue Engineering and Regenerative Medicine

