

# Postgraduate Certificate Cyclist Exercise Physiology

Endorsed by the NBA





## Postgraduate Certificate Cyclist Exercise Physiology

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/pk/sports-science/postgraduate-certificate/cyclist-exercise-physiology](http://www.techtute.com/pk/sports-science/postgraduate-certificate/cyclist-exercise-physiology)

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# 01

# Introduction

The intense movement of the legs inherent in cycling implies a considerable energy expenditure, which makes it essential to be in good physical condition and that the cardiovascular and respiratory systems are in optimal condition. Consequently, this requires that athletes have a solid command of Physiology as the basis of their training, so this title represents a unique opportunity to update on the subject. With it, the professional will address the energy systems or the role of lactate, determining the different ventilatory thresholds. All this and more will be available to students through a very complete online format that provides numerous facilities.





“

*The perfect opportunity to address the physiological factors that determine a good practice of Professional Cycling”*

As the cyclist trains, a series of adaptations occur at the cellular and muscular level. These allow greater efficiency in the use of energy substrates, a better capacity to produce energy and an increase in resistance to fatigue. Taken together, all these factors translate into an enhanced performance of the athlete, which is why the mastery of Physiology in this discipline is postulated as an imperative aspect.

That is why this Postgraduate Certificate is positioned as a fantastic option for the sports professional to update himself on the adaptations at the cardiovascular, respiratory, muscular and metabolic level that determine performance. Thus, during the program, the energy systems will be analyzed in detail, focusing on the metabolism of phosphagens and glycolysis. Similarly, students will examine the role of lactate and HR or HRV responses to exercise. With all this, students will improve their skills in situations such as the interpretation of hematology in athletes.

Undoubtedly, a high-level specialization with which the Sports Science professional will verify the benefits of updating at the hands of the largest online university in the world. In this sense, you should not go to a face-to-face center for a single day or submit to pre-set schedules, so the management of academic times will be at your own expense. In addition, with just an Internet connection you will have access to the largest digital library of resources on this subject.

This **Postgraduate Certificate in Cyclist Exercise Physiology** 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 Physiology of Exercise in the Cyclist
- ◆ The graphic, schematic and eminently practical contents with which it is conceived collect sports and practical information on those 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 for 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



*Thanks to this title you will master the operation of the systems energy sources, influencing the phosphagen metabolism and glycolysis"*

“

*Were you looking for a degree on cycling that emphasized the female physiological characteristics for this practice? This program is for you!”*

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

Its 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 an immersive education designed to learn in real situations.

The design of this program focuses on Problem-Based Learning, through which the professional must try to solve the different professional practice situations that arise throughout the academic year. To do this, it will have the help of an innovative interactive video system made by renowned experts.

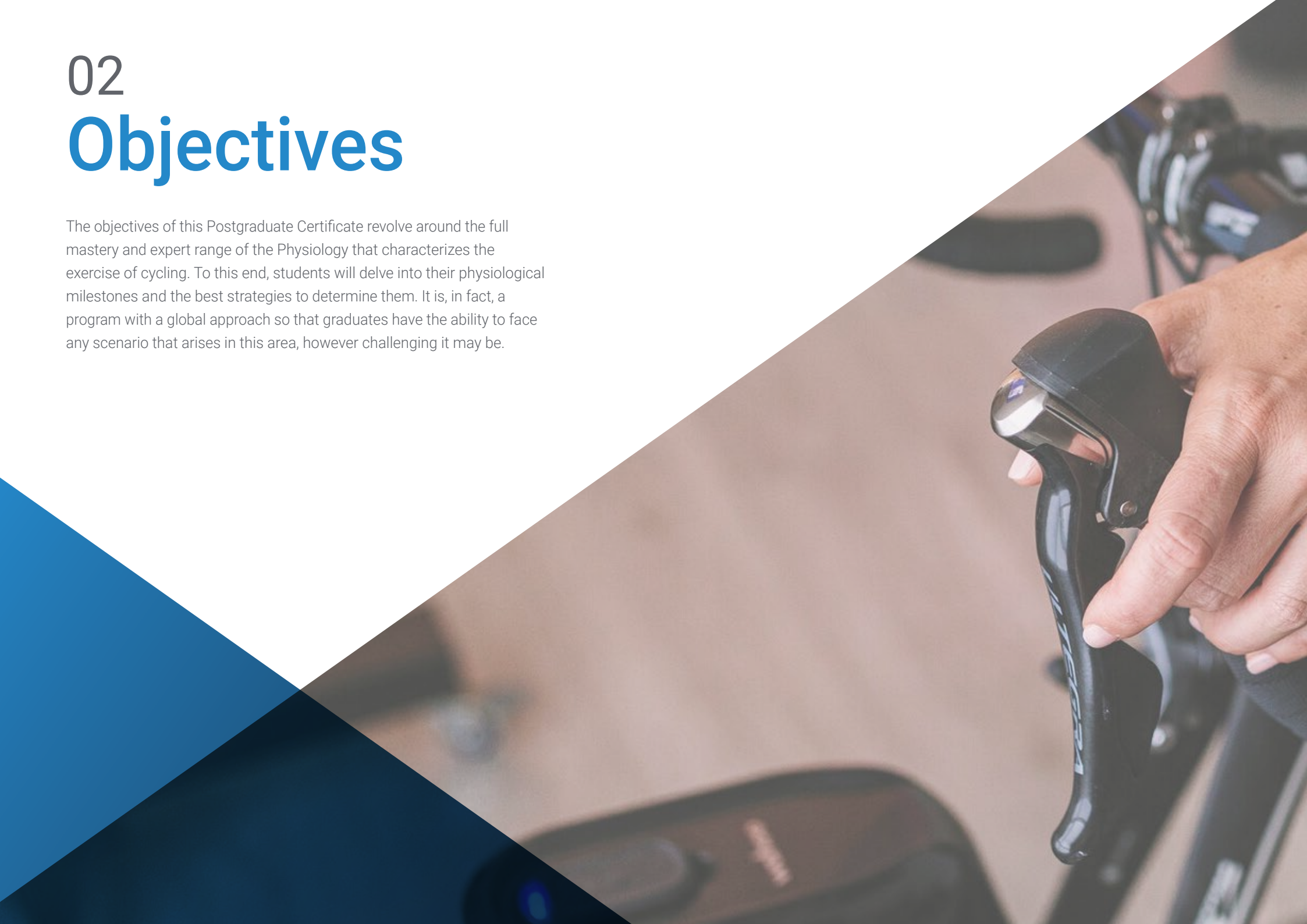
*You will improve your knowledge on the interpretation of hematology in cyclists.*

*You will be a reference when establishing performance markers, such as FTP or VAM.*



# 02 Objectives

The objectives of this Postgraduate Certificate revolve around the full mastery and expert range of the Physiology that characterizes the exercise of cycling. To this end, students will delve into their physiological milestones and the best strategies to determine them. It is, in fact, a program with a global approach so that graduates have the ability to face any scenario that arises in this area, however challenging it may be.





“

*With the objectives that TECH has prepared in this title, you will address with all the guarantees the different energy pathways and their influence on human performance”*



## General Objectives

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- ◆ Understand the performance factors of sport and, therefore, learn to assess the specific needs of each athlete
- ◆ Being able to plan, periodize and develop training programs for cyclists, in short, train students to practice the profession of coach
- ◆ Acquire specific knowledge related to the biomechanics of cycling
- ◆ Understand the operation of the new applications used in the quantification of loads and training prescription
- ◆ Understand the benefits of strength training and be able to apply them to concurrent training
- ◆ Acquire a specialization in cycling-oriented nutrition
- ◆ Understand the functioning of the cycling structures, as well as the modalities and categories of the competitions





## Specific Objectives

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- ◆ Address the different energy pathways and their influence on human performance
- ◆ Know the physiological milestones and know how to determine them
- ◆ Analyze the role of lactate and HRV
- ◆ Understanding the physiology of women in sport



*You will meet your professional goals by mastering all aspects related to performance tests”*



03

# Course Management

The teaching team that TECH has opted for to teach this program is postulated as one of the main strengths of the Postgraduate Certificate. In this sense, the teaching staff has prestigious experts with extensive experience training professional cyclists and triathletes, with an emphasis also on nutritional advice. In fact, they have developed a meritorious research career with important publications in wide-ranging journals.



“

*The extensive experience of teachers training professional cyclists and triathletes will clearly play in your favor during the educational cycle”*

## Management



### Dr. Sola, Javier

- CEO of Training4ll
- WT UAE team coach
- Head of Performance Massi Tactic UCI Womens Team
- Specialist in the biomechanical area of Jumbo Visma UCI WT
- WKO adviser to World Tour cycling teams
- Trainer at Coaches4coaches
- Associate Professor at Loyola University
- Bachelor of Science in Physical Activity and Sport from the University of Seville
- Postgraduate in High Performance of Cyclic Sports from the University of Murcia
- Sports Director Level III
- Numerous Olympic medals and medals at European Championships, World Cups and National Championships

## Professors

### D. Celdrán, Raúl

- ◆ CEO of Natur Training System
- ◆ Burgos BH ProConti Team Nutrition Manager
- ◆ Performance Manager of the professional MTB Klimatiza Team
- ◆ Trainer at Coaches4coaches
- ◆ Degree in Pharmacy from the University of Alcalá
- ◆ Master in Nutrition, Obesity and High Performance in Cyclic Sports from the University of Navarra

### Dr. Moreno Morillo, Aner

- ◆ Performance Manager of the Kuwait National Cycling Team
- ◆ Assistant of the Euskaltel-Euskadi ProConti Team
- ◆ Graduated in Physical Activity and Sports Sciences from the Isabel I University
- ◆ Master's degree in CAFD research from the European University
- ◆ Master in High Performance of Cyclic Sports from the University of Murcia
- ◆ Sports Director National Level III



# 04

## Structure and Content

Throughout the 150 hours of the online academic period, the student will benefit from the individualized educational itinerary that TECH has prepared for him. In fact, delving into the syllabus, you will have the most up-to-date and comprehensive vision that exists in the market in this field, always in line with the latest advances. In addition, their academic experience will be highly efficient, since the educational cycle uses Relearning as a methodological substrate, which will make you internalize the concepts more quickly through repetition.







“

*A study plan that over 6 weeks will provide you with the most comprehensive and up-to-date vision of Physiology in Cycling that you will find on the market”*

## Module 1. Cyclist Exercise Physiology

- 1.1. Energy Systems
  - 1.1.1. Phosphagen Metabolism
  - 1.1.2. Glycolysis
  - 1.1.3. Oxidative System
- 1.2. Heart Rate
  - 1.2.1. Basal FC
  - 1.2.2. Reverse FC
  - 1.2.3. Maximum FC
- 1.3. The Role of the Lactate
  - 1.3.1. Definition
  - 1.3.2. Lactate Metabolism
  - 1.3.3. The Role in Physical Activity and in Determining Thresholds
- 1.4. Determination of Ventilatory Thresholds (Physiological Milestones)
  - 1.4.1. VT1
  - 1.4.2. VT2
  - 1.4.3. Vo2 MAX
- 1.5. Performance Markers
  - 1.5.1. FTP/CP
  - 1.5.2. VAM
  - 1.5.3. Compound Score
- 1.6. Frisby Test
  - 1.6.1. Laboratory Test
  - 1.6.2. Field Test
  - 1.6.3. Power Profile Test
- 1.7. HRV (Heart Rate Variability)
  - 1.7.1. Definition
  - 1.7.2. Measuring Methods
  - 1.7.3. HRV-Based Accommodations





- 1.8. Adaptation
  - 1.8.1. Generalities
  - 1.8.2. Central
  - 1.8.3. Peripherals
- 1.9. Blood Analysis
  - 1.9.1. Biochemistry
  - 1.9.2. Hematology
  - 1.9.3. Hormones
- 1.10. Physiology of Women
  - 1.10.1. Characteristics of the Woman
  - 1.10.2. Training and Menstrual Cycle
  - 1.10.3. Specific Supplementation

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*A syllabus with which you can examine everything you need about the basal, reserve and maximum heart rate”*

# 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"*

### Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*



*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

**“** *Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.





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.

With this methodology, we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



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.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

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



### Practising Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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.





#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this situation. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### 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".



#### 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.



# 06 Certificate

The Postgraduate Certificate in Exercise in the Cyclist Physiology guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.





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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This **Postgraduate Certificate in Cyclist Exercise Physiology** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Cyclist Exercise Physiology**

Official N° of Hours: **150 h.**

Endorsed by the NBA



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present

online training

development languages

virtual classroom

**tech** technological  
university

## Postgraduate Certificate Cyclist Exercise Physiology

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

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**tech** technological  
university