

Postgraduate Certificate Biostatistics with R



Postgraduate Certificate Biostatistics with R

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

Website: www.techtitute.com/us/sports-science/postgraduate-certificate/biostatistics-r

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01

Introduction

The incorporation of new techniques in the research environment opens up a range of possibilities associated with empirical testing. One of the key tools is Statistics, thanks to which the specialists are able to achieve much more accurate data, not only in the results of the study, but also in the organization of the work and the prevention of problems. Biostatistics therefore offers an opportunity to obtain data in the approach to objects of study or problems related to the Health Sciences. For this reason, researchers in this area must have intensive training to keep up to date with new scientific methods. For this reason, TECH has developed a 100% online program, which delves into regression methods with R and statistics applied to the healthcare field. A degree that allows the adaptation of the study according to the personal and professional needs of the students.



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With the study of this Postgraduate Certificate you will deepen in only 180 hours in the R program and the main concepts of Biostatistics in Research associated with Sport”

Currently, quantitative methods integrated in Sports Research studies include Applied Statistics. This tool in healthcare has been essential for testing clinical applications and for them to be developed in humans in compliance with the previously established parameters. The lack of a complete qualification in statistics could lead some researchers to misapply or limit the use of simple or insufficient techniques to address and solve relevant problems.

TECH offers this Postgraduate Certificate in Biostatistics with R to graduates in Sports Science and other professionals working in the health field. With it, the professionals enrolled will investigate the study with statistical data, as well as the statistical techniques of Data Mining with R and its application in Sports Research, among other issues. In addition, TECH has called on a team of teachers versed in the area who have developed the contents, based on their professional experience and reliable knowledge. In addition, it is an experienced group with great human qualities, which makes the study an experience close to the students to guarantee their instruction.

This degree has been designed in a 100% online format, so that the specialist can learn about the trends and new theories of regression methods with R. All this, through theoretical-practical and additional materials that can be downloaded so that students have the reference guide, even offline. This is a possibility offered by TECH so that the professional, not only can consult their doubts in the learning process, but also, when they are in the real scenario, they will have the knowledge available to them, once downloaded to their electronic device. TECH integrates, in turn, the most innovative teaching methods to streamline the academic process and allow a personalized monitoring of the subject according to the possibilities of each student.

This **Postgraduate Certificate in Biostatistics with R** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of case studies presented by experts in Medical Research
- ♦ 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
- ♦ The availability of access to content from any fixed or portable device with an Internet connection



Are you going to miss the opportunity to update and explore regression methods applied to Sports research? TECH offers you all the knowledge you need to learn in an easy and fast way"

“

Thanks to TECH you will discover an alternative to orthodox academic programs. With this degree you will not have to do without other activities thanks to its 100% online mode”

Learning about multivariate analysis and the new scientific methods associated with statistics will help you develop your research work and those in which you collaborate.

An optimal qualification for you to perfect your professional skills and become part of a group of experts at the forefront of sports research.

The program's teaching staff includes professionals from the sector who contribute their work experience to this educational program, 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 programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.



02 Objectives

TECH's main objective is to offer highly rigorous programs that will improve the knowledge of the enrolled specialists. In this case, the Postgraduate Certificate in Biostatistics with R aims to provide students with the most up-to-date content on statistical data management techniques. In addition, TECH has selected a professional group in charge of elaborating and imparting the knowledge that guarantees, in turn, the correct instruction of the students. All this, through a 100% online modality, which makes it possible to combine the study with the other areas of the life of the specialists.



“

Don't get left behind in the upgrade queue. TECH has designed a program that will allow you to study while pursuing other activities, such as your current job”



General Objectives

- ♦ Understand the appropriate approach to a question or problem to be solved
- ♦ Assess the state of the art of the problem through literature search
- ♦ Assess the feasibility of the potential project
- ♦ Study the drafting of a project in accordance with the different calls for proposals
- ♦ Examine the search for funding
- ♦ Master the necessary data analysis tools
- ♦ Writing scientific articles (papers) according to the target magazines
- ♦ Generate posters relevant to the topics addressed
- ♦ Know the tools for dissemination to the non-specialized public
- ♦ Delve into data protection
- ♦ Understand the transfer of knowledge generated to industry or the clinic
- ♦ Examine the current use of artificial intelligence and massive data analysis
- ♦ Study examples of successful projects





Specific Objectives

- Describe the main concepts of biostatistics
- Learn how to use the R program
- Define and understand the regression method and multivariate analysis with R
- Explore regression methods applied to research
- Recognize the concepts of statistics applied to research
- Describe the statistical techniques of data mining
- Provide knowledge of the most commonly used statistical techniques in biomedical research



Boost not only your career, but also advances in Biomedicine with Statistics and R in Health Research in just 6 weeks”

03

Course Management

In its line of academic rigor, TECH has carefully selected a group of research experts with years of experience in the sector and with great human and teaching qualities. In this way, students will learn about Biostatistics with R not only with theoretical knowledge, but also with all the professional attention that will offer them the keys for their development in the workplace. In addition, the specialist will be able to get in direct contact with the teachers through a direct communication channel that will solve all their questions regarding the subject.



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This is a unique opportunity for you to get up to date in Biostatistics with R from the hand of real experts in the area, learning in detail the latest developments in the field in a dynamic and intensive way”

Management



Dr. López-Collazo, Eduardo

- ♦ Deputy Scientific Director at the Healthcare Research Institute of the La Paz University Hospital
- ♦ Head of the Department of Inmune Response and Infectious Diseases at IdiPAZ
- ♦ Head of the Department of Inmune Response, Tumors and Immunology at IdiPAZ
- ♦ President of the IdiPAZ Research Commission
- ♦ Sponsor of the External Scientific Committee of the Murcian Institute of Health Research
- ♦ Member of the Scientific Commission of FIDE
- ♦ Editor of the international scientific journal Mediators of Inflammation
- ♦ Editor of the international scientific journal Frontiers of Immunology
- ♦ Coordinator of IdiPAZ Platforms
- ♦ Coordinator of Health Research Funds in the areas of Cancer, Infectious Diseases and HIV
- ♦ PhD in Nuclear Physics, University of La Habana
- ♦ Doctorate in Pharmacy from the Complutense University of Madrid

Professors

Mr. Arnedo Abad, Luis

- ♦ Data Scientist & Analyst Manager in Industrias Arnedo
- ♦ Data & Analyst Manager in Boustique Perfumes
- ♦ Data Scientist & Analyst Manager in Darecod
- ♦ Postgraduate Certificate in Statistics
- ♦ Psychology Graduate



04

Structure and Content

TECH has provided its programs with dynamic materials so that the specialist can perfect their skills in the most versatile and simple way possible. In addition, the contents of this Postgraduate Certificate have been carefully designed by the teachers who endorse the syllabus of the degree and its ultimate goal of instructing the graduate in Sports Science and other professionals interested in Biostatistics with R. Likewise, the Relearning methodology has been applied, so that students do not invest long hours of memorization and can easily assimilate the contents. A practical program focused on the research scenarios in which they will be incorporated or where they are already working in order to stand out as highly qualified professionals.

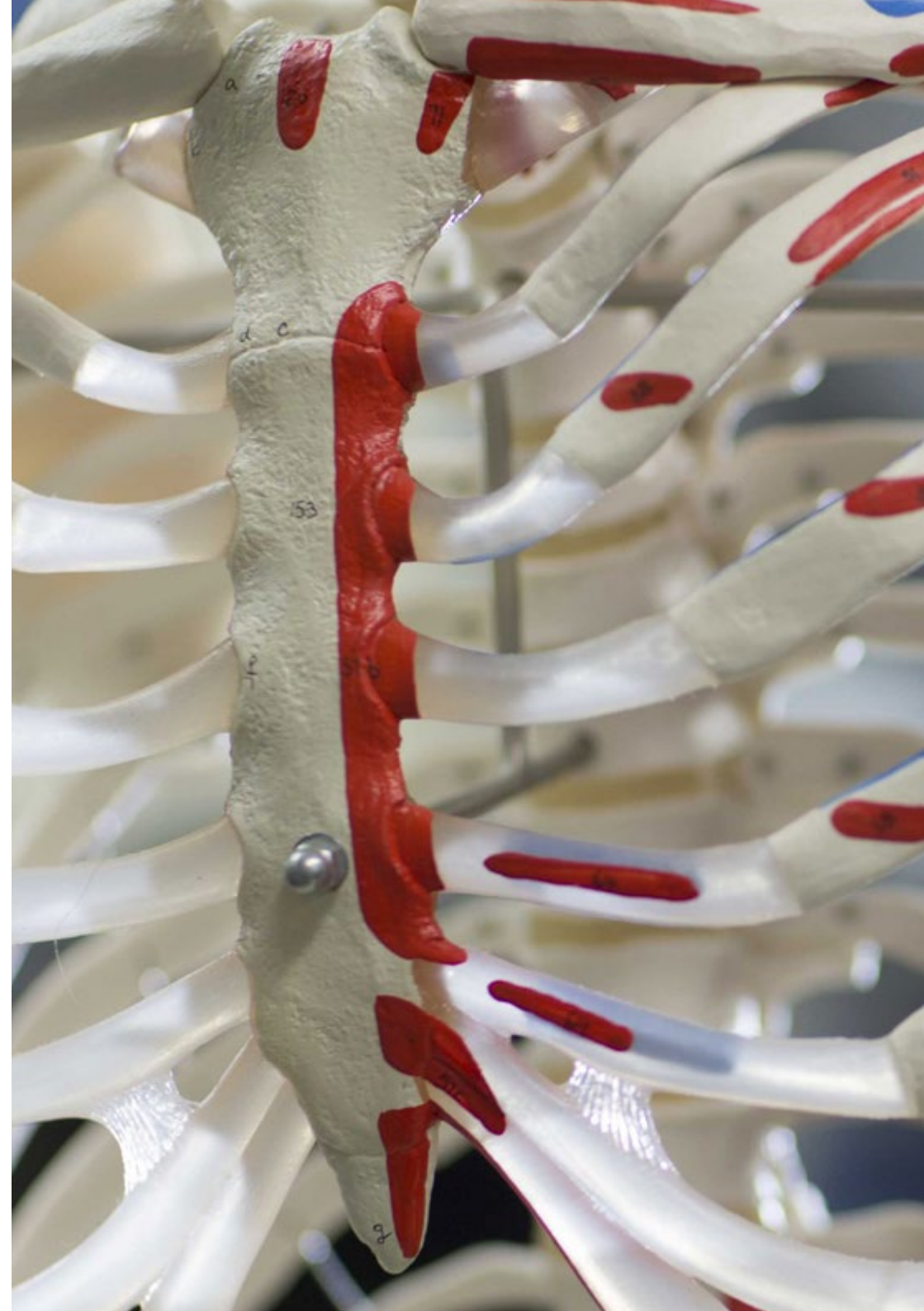


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With TECH you will get the most out of your degree, because its modern pedagogical tools and digital format will allow you to choose the time and place of study”

Module 1. Statistics and R in Health Research

- 1.1. Biostatistics
 - 1.1.1. Introduction to The Scientific Method
 - 1.1.2. Population and Sample. Sampling Measures of Centralization
 - 1.1.3. Discrete Distributions and Continuous Distributions
 - 1.1.4. General Outline of Statistical Inference. Inference about a Normal Population Mean. Inference about a General Population Mean
 - 1.1.5. Introduction to Nonparametric Inference
- 1.2. Introduction to R
 - 1.2.1. Basic Features of the Program
 - 1.2.2. Main Object Types
 - 1.2.3. Simple Examples of Simulation and Statistical Inference
 - 1.2.4. Graphs
 - 1.2.5. Introduction to R Programming
- 1.3. Regression Methods with R
 - 1.3.1. Regression Models
 - 1.3.2. Variable Selection
 - 1.3.3. Model Diagnosis
 - 1.3.4. Treatment of Outliers
 - 1.3.5. Regression Analysis
- 1.4. Multivariate Analysis with R
 - 1.4.1. Description of Multivariate Data
 - 1.4.2. Multivariate Distributions
 - 1.4.3. Dimension Reduction
 - 1.4.4. Unsupervised Classification: Cluster Analysis
 - 1.4.5. Supervised Classification: Discriminant Analysis
- 1.5. Regression Methods for Research with R
 - 1.5.1. Generalized Linear Models (GLM): Poisson Regression and Negative Binomial Regression
 - 1.5.2. Generalized Linear Models (GLM): Logistic and Binomial Regressions
 - 1.5.3. Poisson and Negative Binomial Regression Inflated by Zeros
 - 1.5.4. Local Fits and Generalized Additive Models (GAMs)
 - 1.5.5. Generalized Mixed Models (GLMM) and Generalized Additive Mixed Models (GAMM)





- 1.6. Statistics Applied to Biomedical Research with R I
 - 1.6.1. Basic Notions of R. Variables and Objects in R. Data handling. Files Graphs
 - 1.6.2. Descriptive Statistics and Probability Functions
 - 1.6.3. Programming and Functions in R
 - 1.6.4. Contingency Table Analysis
 - 1.6.5. Basic Inference with Continuous Variables
- 1.7. Statistics Applied to Biomedical Research with R II
 - 1.7.1. Analysis of Variance
 - 1.7.2. Correlation Analysis
 - 1.7.3. Simple Linear Regression
 - 1.7.4. Multiple Linear Regression
 - 1.7.5. Logistic Regression
- 1.8. Statistics Applied to Biomedical Research with R III
 - 1.8.1. Confounding Variables and Interactions
 - 1.8.2. Construction of a Logistic Regression Model
 - 1.8.3. Survival Analysis
 - 1.8.4. Cox Regression
 - 1.8.5. Predictive Models. ROC Curve Analysis
- 1.9. Statistical Data Mining Techniques with R I
 - 1.9.1. Introduction. Data Mining. Supervised and Unsupervised Learning. Predictive Models Classification and Regression
 - 1.9.2. Descriptive Analysis Data Pre-Processing
 - 1.9.3. Principal Component Analysis (PCA)
 - 1.9.4. Principal Component Analysis (PCA)
 - 1.9.5. Cluster Analysis. Hierarchical Methods. K-Means
- 1.10. Statistical Data Mining Techniques with R II
 - 1.10.1. Model Evaluation Measures. Predictive Ability Measures. ROC Curves
 - 1.10.2. Models Assessment Techniques. Cross-Validation. Bootstrap Samples
 - 1.10.3. Tree-Based Methods (CART)
 - 1.10.4. Support Vector Machines (SVM)
 - 1.10.5. Random Forest (RF) and Neural Networks (NN)

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 Biostatistics with R guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This program will allow you to obtain your **Postgraduate Certificate in Biostatistics with R** 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.

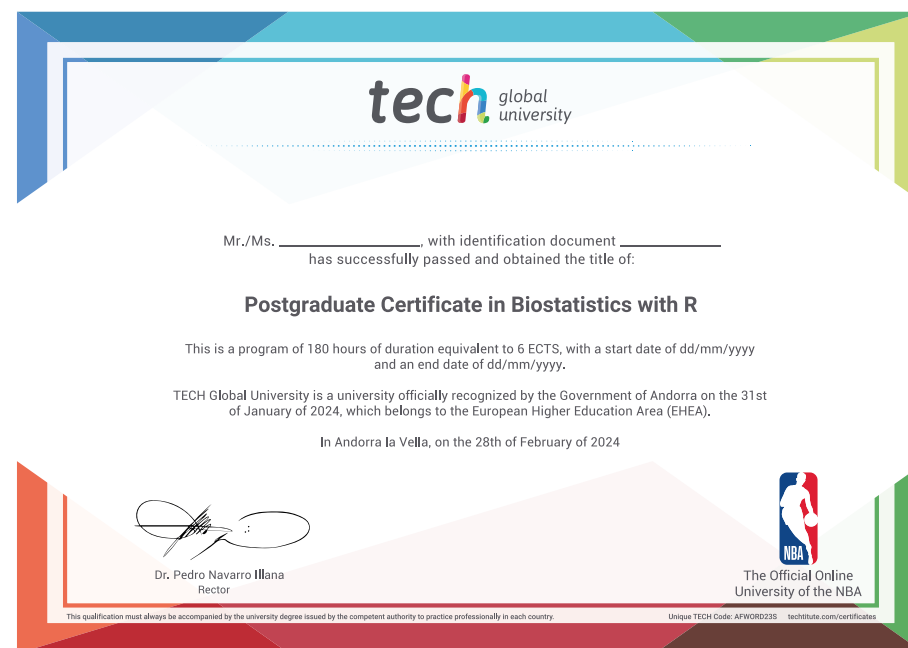
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Biostatistics with R**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



*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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