Postgraduate Certificate
Biostatistics with R

tech *technological university*

Postgraduate Certificate
Biostatistics with R

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

Website: **www.techtitute.com/pk/dentistry/postgraduate-certificate/biostatistics-r**

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01
Introduction

The power and flexibility of R has made this programming language one of the greatest assets for data analysis in dental research. It provides the researcher with a wide range of statistical tools, whether linear and nonlinear models, classification and clustering algorithms or time series analysis, among others, so the dental professional must handle biostatistics with R with solvency to validate their hypotheses and conclusions with strength, so this title is a perfect choice. With it, you will examine the method of Regression and multivariate analysis with R, statistical techniques of *Data Mining* or the main concepts of Biostatistics under a 100% online format.

" *A Postgraduate Certificate of great value for you to validate your hypotheses and conclusions with greater strength through Biostatistics with R"*

Biostatistics has become essential in healthcare research to design experimental and observational studies, analyze the data collected and make decisions based on these results. In fact, it allows researchers to consider factors such as variability and uncertainty in the data, which is relevant to validate the conclusions obtained. Moreover, research results are often presented in the form of figures or statistics, and biostatistics helps researchers to interpret them correctly. Therefore, its contribution is undoubtedly essential to improve the understanding of diseases and medical treatments in fields such as dentistry.

That is why, if dental professionals do not master biostatistics with R, they would be at a clear disadvantage, and their research would be less solid than that of other colleagues because they do not apply advanced tools for the validity of the results. All the more reason why this Postgraduate Certificate will be of great value to update your knowledge in this subject of growing interest. Therefore, you will learn about statistical concepts applied to research, the fundamentals of the R language and its methods of regression and multivariate analysis. In addition, you will delve into Supervised and Unsupervised Learning using *Data Mining* in its work methodology.

Undoubtedly, a high-level preparation that will take your research to the next level. For this, you will only need a device with Internet connection, which will open the doors to an extensive digital catalog of resources at your disposal in the Virtual Campus. Within this platform, students will be in charge of their own educational time, making use of advanced contents designed by a reference teaching team.

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

- The development of case studies presented by experts in Biostatistics. with R
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

This is the program you are looking for to analyze in detail the methods of Regression and multivariate analysis with R"

Through advanced educational materials, you will benefit from an educational cycle condensed into only 150 hours that you will manage at your convenience as you go through the fundamentals of the R language"

You will master each and every one of the main concepts of Biostatistics with R to take your dental research to the next level.

Do you want to handle the most effective statistical techniques with Data Mining? You will do it in only 6 weeks!

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

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

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Objectives

The design of the program of this Postgraduate Certificate has been oriented to the achievement of a series of objectives that will provide the student with advanced competences in the handling of Biostatistics with R. Biostatistics with R. In this sense, the title seeks that dentists identify the statistical techniques of *Data Mining* and incorporate them into their research, while making use of useful regression methods and other tools. All this always based on the most recent knowledge available in the current research landscape.

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"*This is your opportunity to get up to date on the latest predictive models or Cox Regression*"

General Objectives

- Understand the appropriate approach to a question or problem to be solved
- Asses 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
- Write scientific articles (papers) for the daily 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

Achieve the postgraduate certificate objectives and successfully perform complex statistical simulations and statistical inference"

03
Course Management

One of the main premises of TECH is to provide the students with the maximum possible guarantees for the successful acquisition of the skills and competences of the program in which they are enrolled. In this case, one of the elements that will play in their favor in this aspect is a powerful teaching team that is made up of experts in biomedical research. These professors apply the latest statistical *data mining* techniques in their research practice, so the advanced knowledge that will be deposited in each of the lessons will be key for the student.

You will have at your disposal great experts who have developed advanced Data Mining techniques in their research to achieve the best results"

Address

Dr. López-Collazo, Eduardo

- Scientific Deputy Director in the Institute for Health Research the Health Research Institute of 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 Abade, Luis

- Data & Analyst Manager
- 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

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Structure and Content

The syllabus has been designed following an online format that will allow dental professionals to combine their activity with this high level of training without any problem. In fact, it is not necessary to attend a single day at an on-site center and you will not even have to adapt to specific schedules. Instead, you will be able to manage your study time and even internalize the ideas of the syllabus more quickly thanks to the dynamism of the Virtual Campus resources. Multimedia formats as varied as interactive diagrams, videos, master classes and case studies are available.
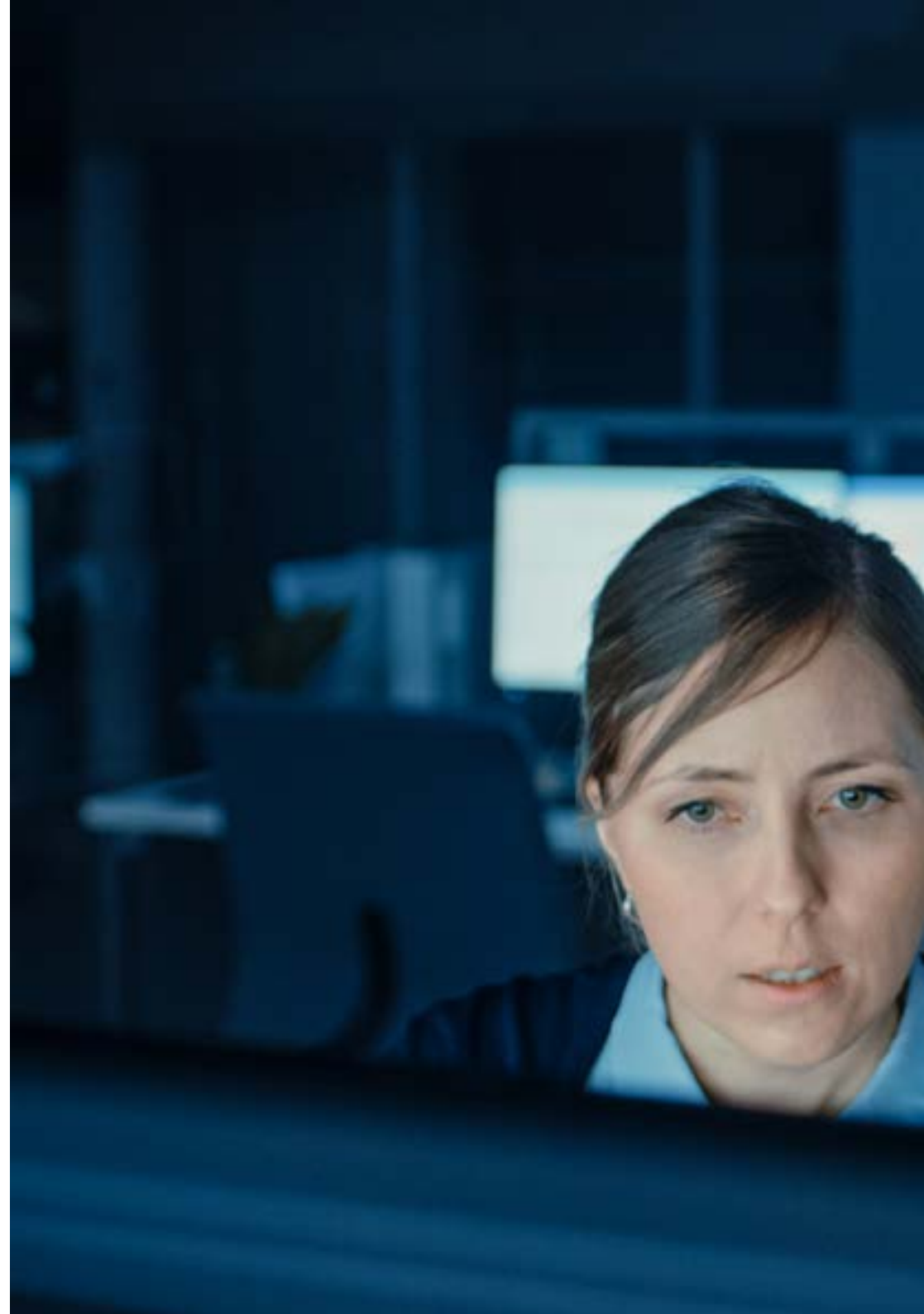
Interactive diagrams, videos, master classes or case analyses will boost your performance.

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 adjustments and generalized additive models (GAM)

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

In a given situation, what should a professional do? 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 dentist'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. Dentists who follow this method not only grasp concepts, but also develop their mental capacity by means of exercises to evaluate real situations and apply their 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.

The student will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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 we have trained more than 115,000 dentists with unprecedented success, in all specialties regardless of the workload. 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for 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.

Educational Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances, and to the forefront of 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.

20%

15%

15%

3%

20%

17%

7%

3%

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 suggesting that observing third-party experts can be useful.

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.

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 Technological University.

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

This **Postgraduate Certificate in Biostatistics with R** contains the most complete and up-to-date scientific 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 Biostatistics with R**

Official Nº of Hours: **150 h.**

tech technological university

Awards the following

CERTIFICATE

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Biostatistics with R

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

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 certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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