Postgraduate Diploma
Health Research Tools

tech technological university

Postgraduate Diploma
Health Research Tools

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

Website: **www.techtitute.com/pk/medicine/postgraduate-diploma/postgraduate-diploma-health-research-tools**

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01
Introduction

The management of clinical information is key to simultaneous advances at a global level. COVID questioned the speed of the findings, but in this case the investment in research was such that in just a few months the components that reduced the impact of the virus on individuals were found. The vaccine was the result of an intensive study in which experts from all over the world worked in coordination. In this scientific work, not only was the wisdom of doctors enough, but AI, *Big Data* and statistics were also involved. For this reason, it is essential that specialists working in this area have an update on search tools in the health sector. TECH has developed a 100% online and rigorous program, which delves into knowledge management and data analysis, to update the skills of doctors.

Delve into the research study so that you master the new tools and apply them to your own projects and those in which you collaborate"

It has taken years of research to achieve the medical advances that are currently applied in the health service. However, this discipline is increasingly demanding and its speed is highly valued. Therefore, the mastery of clinical information management techniques is key to the management of the health and social care field, research, publication of articles, theses and applied reports. In this way, experts could bring a wide prestige to their studies and focus them in a scientific line with greater guarantees.

For this reason, TECH Technological University offers a Postgraduate Diploma in Health Research Tools Research that delves into the interpretation of the information involved in the use of basic statistical tools and scientific methodology integrated by companies specialized in field work. In addition, thanks to TECH, students will delve into applied medical information on the preparation of reports, studies and documents aimed at decision-making on socio-health issues.

This is a 100% online program that is ideal for balancing study with the students' professional and personal lives. TECH applies the innovative Relearning methodology to facilitate professionals the gradual assimilation of the syllabus not requiring long hours of memorization, typical of orthodox teaching. In addition, the student will have the support of a teaching team specialized in the area that has participated in numerous studies in the health field.

This **Postgraduate Diploma in Health Research Tools** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Case studies presented by experts in Health Sciences Research
- The graphic, schematic, and practical contents with which they are created, provide medical 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 work
- Content that is accessible from any fixed or portable device with an Internet connection

Expand your knowledge in the definition of general and specific objectives of research projects, in order to master their implementation"

"Graphical representations of data are key in healthcare research and other advanced analysis. Delve into this field with guaranteed success through a 100% online program"

Be part of the evolution of clinical research projects thanks to the simple examples of simulation and statistical inference offered by TECH.

Master the ROC Curves and the types of multiple regression analysis to apply to your scientific trials and offer a with greater precision service.

The program includes, in its teaching staff, professionals from the sector who bring to this program the experience of their work, in addition to recognized specialists from prestigious reference societies and 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.

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Objectives

This Professional Postgraduate Diploma in Health Research Tools aims to provide all the knowledge in tools of research to doctors and other professionals interested. For this purpose, this program delves into nonparametric inference; local adjustments and generalized additive models; regression methods with R and programming and functions in R, among many other topics. By being part of this study, the student will receive a detailed teaching that will facilitate decision making in the real scientific scenario, through the simulation of real cases.

Delve into Poisson and negative binomial regression inflated by zeros to fully master regression methods for research with R"

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) according to 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

Would you like to apply computational statistics in your projects? Improve exponentially your scientific scope, thanks to the rigorous knowledge that you will gain with TECH"

Specific Objectives

Module 1. Generation of Research Projects
- Learn how to assess the feasibility of the potential project
- Delve into the essential milestones for writing a research project
- Delve into the criteria for exclusion/inclusion in projects
- Learn how to set up the specific team for each project

Module 2. Statistics and R in Health Research
- Describe the main concepts of biostatistics
- Learn how to use the R program
- Define and understand the regression method and multivariate analysis with R
- 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

Module 3. Graphical Representations of Data in Health Research and Other Advanced Analysis
- Master the tools of computational statistics
- Learn to generate graphs for the visual interpretation of data obtained in research project
- Obtain in-depth knowledge of dimensionality reduction methods
- Delve into the comparison of methods

03

Course Management

In order to impart the knowledge of this program in a comprehensive manner, TECH has relied on experienced teachers working in Health Research. With their collaboration, students not only acquire theoretical contents, but also incorporates a practical nature, as students will adopt the advice of experts in their actions.

At the same time, professionals will be able to contact the teachers through a direct communication channel through which they will be able to resolve all their questions on the subject.

TECH has been nurtured by expert teachers who have their own lines of research in Health Sciences and who will promote the success of yours with reliable knowledge"

Management

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 Scientist & Analyst Manager in Industrias Arnedo
- Data & Analyst Manager in Boustique Perfumes
- Data Scientist & Analyst Manager in Darecod
- Postgraduate Certificate in Statistics
- Psychology Graduate
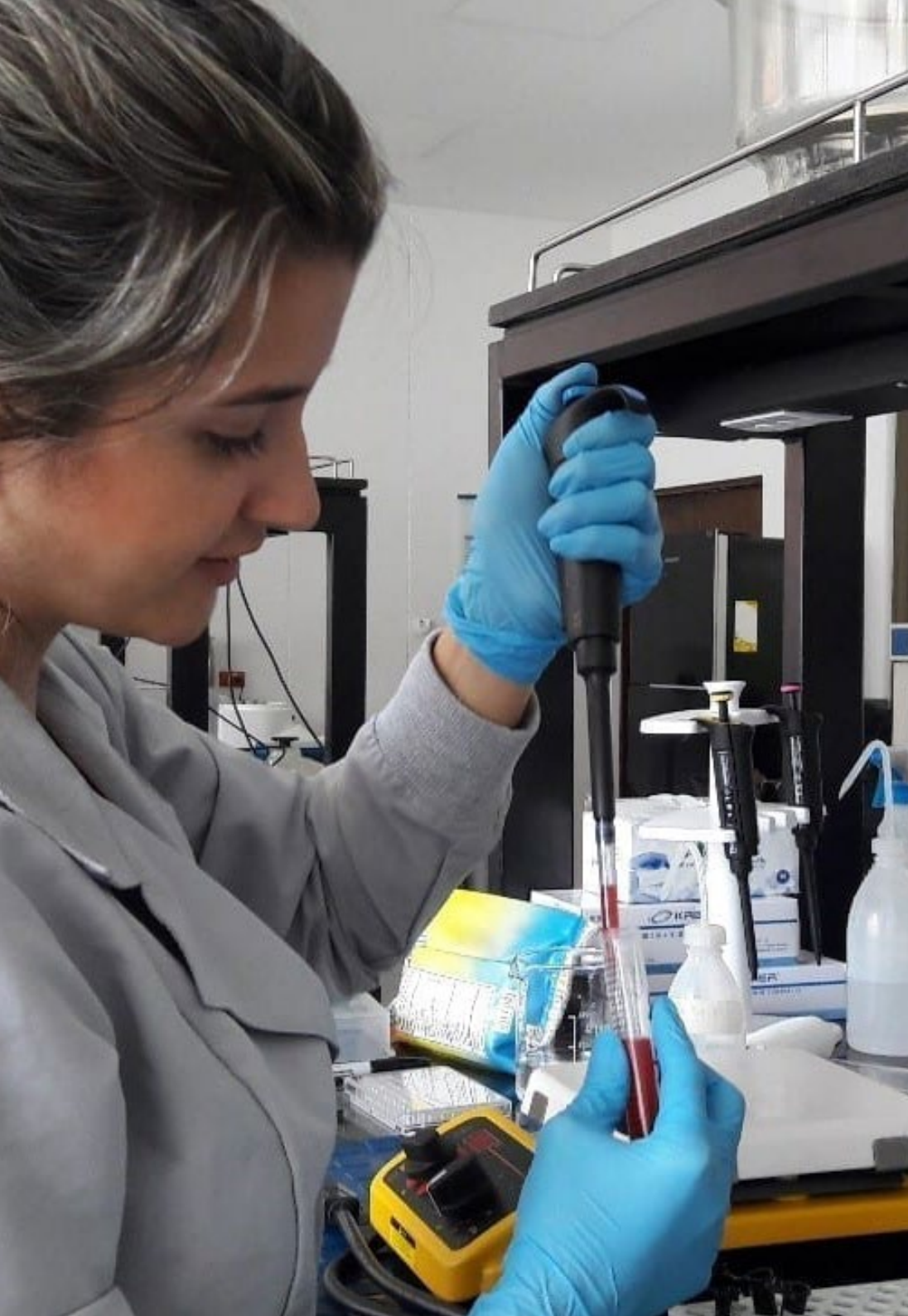
Dr. Pascual Iglesias, Alejandro
- Bioinformatics Platform Coordinator, La Paz Hospital
- Advisor to the COVID-19 Expert Committee of Extremadura
- Researcher in Eduardo López-Collazo's innate immune response research group, Instituto de Investigación Sanitaras University Hospital La Paz
- Researcher in the coronavirus research group of Luis Enjuanes, National Center of Biotechnology CNB-CSIC
- Coordinator of Continuing Education in Bioinformatics, Health Research Institute of the University Hospital La Paz
- Cum Laude Doctor in Molecular Biosciences from the Autonomous University of Madrid
- Degree in Biology Molecular from the University of Salamanca
- Professional Master´s Degree in Cellular and Molecular Physiopathology and Pharmacology from the Universidad of Salamanca

Dr. Avendaño Ortiz, José
- Sara Borrell Researcher Foundation for Biomedical Research of the Ramón y Cajal University Hospital (FIBioHRC/IRyCIS)
- Researcher Foundation for Biomedical Research of La Paz University Hospital (FIBHULP/ IdiPAZ)
- Researcher HM Hospitals Foundation (FiHM)
- Graduate in Biomedical Sciences from the University of Lleida
- Master's Degree in pharmacological research from the Autonomous University of Madrid
- PhD in Pharmacology and Physiology from the Autonomous University of Madrid

Structure and Content

The contents of this Postgraduate Diploma in Health Research Tools has been developed by experts in health sciences Thus, TECH Technological University offers a program that explores the generation of research projects, statistics and R in health research and graphical representations of data health research and other advanced analysis. All this, through the innovative *Relearning* methodology, which will exempt students from long hours of study, turning it into a constant learning based on theoretical and practical exercises.

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"The scientific context is constantly changing at a fast pace. Don't get left behind in the statistical update and use the innovative tools that TECH offers you"

Module 1. Generation of Research Projects

1.1.   General Structure of a Project
1.2.   Presentation of Background and Preliminary Data
1.3.   Definition of the Hypothesis
1.4.   Definition of General and Specific Objectives
1.5.   Definition of the Type of Sample, Number and Variables to be Measured
1.6.   Establishment of the Scientific Methodology
1.7.   Exclusion/Inclusion Criteria in Projects with Human Samples
1.8.   Establishment of the Specific Team: Balance and Expertise
1.9.   Ethical aspects and Expectations: an Important Element that we Forget
1.10.   Budget Generation: a fine Tuning Between the Needs and the Reality of the Call

Module 2. Statistics and R in Health Research

2.1.   Biostatistics
    2.1.1.   Introduction to The Scientific Method
    2.1.2.   Population and Sample. Sampling Measures of Centralization
    2.1.3.   Discrete Distributions and Continuous Distributions
    2.1.4.   General Outline of Statistical Inference. Inference about a Normal Population Mean. Inference about a General Population Mean
    2.1.5.   Introduction to Nonparametric Inference
2.2.   Introduction to R
    2.2.   1 Basic Features of the Program
    2.2.   2 Main Object Types
    2.2.   3 Simple Examples of Simulation and Statistical Inference
    2.2.   4 Graphs
    2.2.   5 Introduction to R Programming
2.3.   Regression Methods with R
    2.3.1.   Regression Models
    2.3.2.   Variable selection
    2.3.3.   Model diagnosis
    2.3.4.   Outlier treatment
    2.3.5.   Regression analysis

2.4.   Multivariate Analysis with R
    2.4.1.   Description of Multivariate Data
    2.4.2.   Multivariate Distributions
    2.4.3.   Dimension Reduction
    2.4.4.   Unsupervised Classification: Cluster Analysis
    2.4.5.   Supervised Classification: Discriminant Analysis
2.5.   Regression Methods for Research with R
    2.5.1.   Generalized Linear Models (GLM): Poisson Regression and Negative Binomial Regression
    2.5.2.   Generalized Linear Models (GLM): Logistic and Binomial Regressions
    2.5.3.   Poisson and Negative Binomial Regression Inflated by Zeros
    2.5.4.   Local Fits and Generalized Additive Models (GAMs)
    2.5.5.   Generalized Mixed Models (GLMM) and Generalized Additive Mixed Models (GAMM)
2.6.   Statistics Applied to Biomedical Research with R I
    2.6.1.   Basic Notions of R. Variables and Objects in R. Data handling. Files Graphs
    2.6.2.   Descriptive Statistics and Probability Functions
    2.6.3.   Programming and Functions in R
    2.6.4.   Contingency Table Analysis
    2.6.5.   Basic Inference with Continuous Variables
2.7.   Statistics Applied to Biomedical Research with R II
    2.7.1.   Analysis of Variance
    2.7.2.   Correlation Analysis
    2.7.3.   Simple Linear Regression
    6.7.4.   Multiple Linear Regression
    2.7.5.   Logistic Regression
2.8.   Statistics Applied to Biomedical Research with R III
    2.8.1.   Confounding Variables and Interactions
    2.8.2.   Construction of a Logistic Regression Model
    2.8.3.   Survival Analysis
    2.8.4.   Cox Regression
    2.8.5.   Predictive Models. ROC Curve Analysis

Module 3. Graphical Representations of Data in Health Research and Other Advanced Analysis

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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.

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, 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.

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 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 Diploma in Health Research Tools guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Health Research Tools** 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 Diploma** issued by **TECH Technological University** via tracked delivery*.

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

Program: **Postgraduate Diploma in Health Research Tools**

Official No. of Hours: **450 h.**

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Awards the following

CERTIFICATE
to

Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Health Research Tools

This is a qualification awarded by this University, equivalent to 450 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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