Postgraduate Diploma

Statistical Inference

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Postgraduate Diploma
Statistical Inference

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Technological University**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-statistical-inference**

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01

Introduction

Inferential Statistics is mainly used in the study and analysis of populations and trends in order to reach a series of conclusions that allow a particular sector or entity to establish guidelines for action based on the needs or reactions of the environment. Therefore, it is a branch of Statistics that allows projecting a plan of action towards success, reducing the probability of failure by focusing on the comparison of a sample of the whole. And if the professional is looking for a program that allows him to specialize in this area, this is the perfect opportunity to achieve it. Through the program of this 100% online academic experience you will work on the most effective and innovative estimation strategies, as well as on the multivariate techniques that have had the best results so far. All this during 6 months of multidisciplinary training, without schedules or face-to-face classes.

Would you like to become a true expert in Estimation? Then this TECH program is perfect for you. What are you waiting for to enroll?"

Voting tendency polls, market analysis or medical epidemiology are three of the many sectors in which Statistical Inference plays a fundamental role in the deduction of conclusions and trends through the analysis of a sample of the whole. Thanks to the projection and comparison of data, it has been possible to determine the favorite candidate in an election, which product people prefer and in which context, or the public measures to be taken or avoided to prevent or control the development of a viral or infectious disease.

It is, therefore, a branch of the Social Sciences of vital importance for the advancement of society based on its needs and demands and in which its professionals must have a very high level of knowledge to work effectively in it. For this reason, and in order to provide those interested in this field with all the information that will allow them to keep up to date with its advances, TECH and its team of experts have developed a very complete program that is perfect for this purpose. It is a program distributed in 450 hours of theoretical, practical and additional material thanks to which the graduate will be able to delve into the latest aspects of estimation (hypothesis testing, Bayesian inference, factor analysis, etc.) and multivariate statistical techniques: principal component modeling, correspondence analysis, cluster analysis, etc.

All this 100% online and during 6 months of multidisciplinary training in which, in addition to a complete and dynamic syllabus, you will have access to additional high quality material: detailed videos, research articles, complementary readings and much more! Moreover, thanks to the use of the*Relearning* methodology in the development of the program, you will not have to invest extra hours in memorizing, but you will attend a natural and progressive updating of your knowledge.

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

- The development of case studies presented by experts in Applied Statistics
- The graphic, schematic and practical contents of the book provide technical and practical information on those 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

The best program to specialize in Statistical Inference through a multidisciplinary and 100% online program"

A program that immerses you in hypothetical testing through a thorough knowledge of its techniques and strategies, such as Bayesian or goodness of fit estimation"

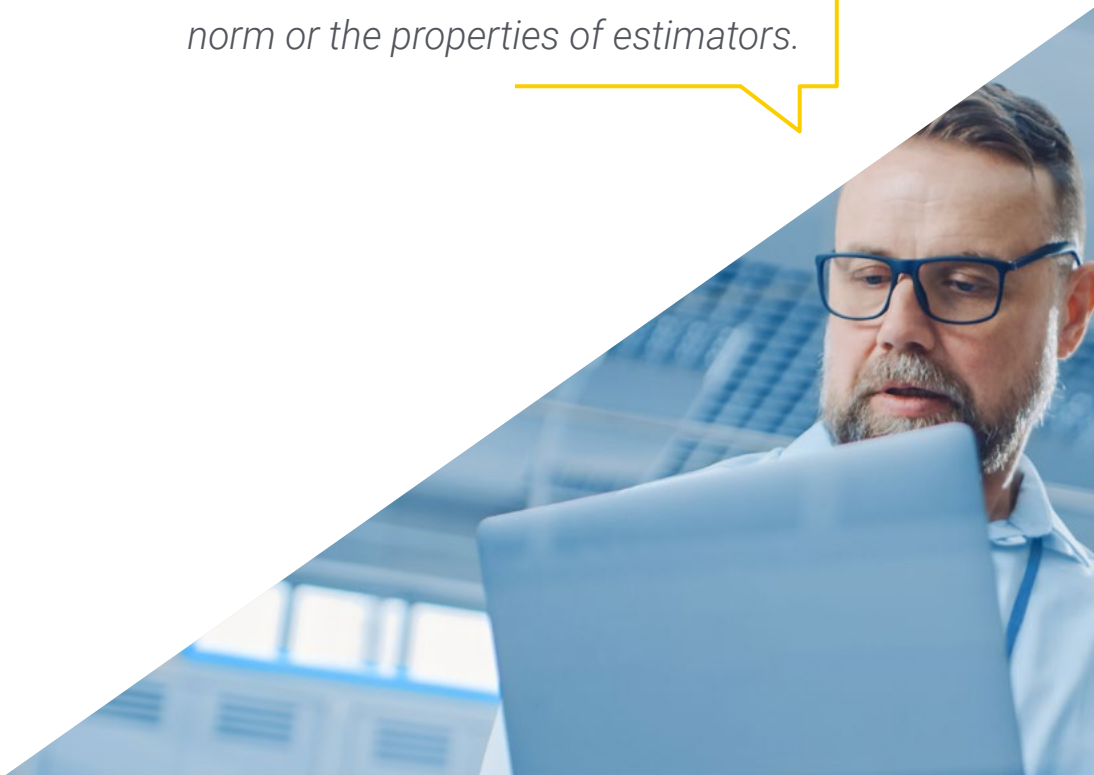
Each module includes an exclusive section in which you will find examples that will make it easier for you to visualize the concepts developed in the syllabus.

You will have 450 hours of the best theoretical-practical and additional content to delve into aspects such as the distributions associated with the norm or the properties of estimators.

The program's teaching staff includes professionals from the industry who contribute their work experience to this 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.



02

Objectives

Inferential Statistics is a fundamental tool for professionals in this field, so being up to date with its novelties and technical advances is a necessity for all of them. For this reason, TECH and its team of experts have developed this program, with the aim of guiding graduates in updating and expanding their knowledge, as well as in the approach of new and comprehensive estimation and multivariate strategies. All of this 100% online and in only 6 months of multidisciplinary course.

If your objectives include mastering factor analysis, from its fundamentals to rotation methods, this is the perfect option to achieve it. Don't let it pass you by"

General Objectives

- Develop a broad and specialized knowledge of the different applications of Statistical Studies in today's industry
- Know in detail the most effective and avant-garde statistical inference techniques in the statistical sector
- Explore the exploration and description of data as the basis of statistical studies

You will be able to access the Virtual Campus whenever you need it and from any device with anInternet connection. Without limits or schedules and with an academic modality that adapts to you"

Specific Objectives

Module 1. Estimations I

- Become familiar with the methods of statistical inference: estimations
- Apply "statistical thinking" and deal with the different stages of a statistical study (from the problem statement to presenting results)

Module 2. Estimations II

- Become familiar with the methods of statistical inference: hypothesis contrasting
- Choose and use the most appropriate estimation method in an investigation according to its objectives

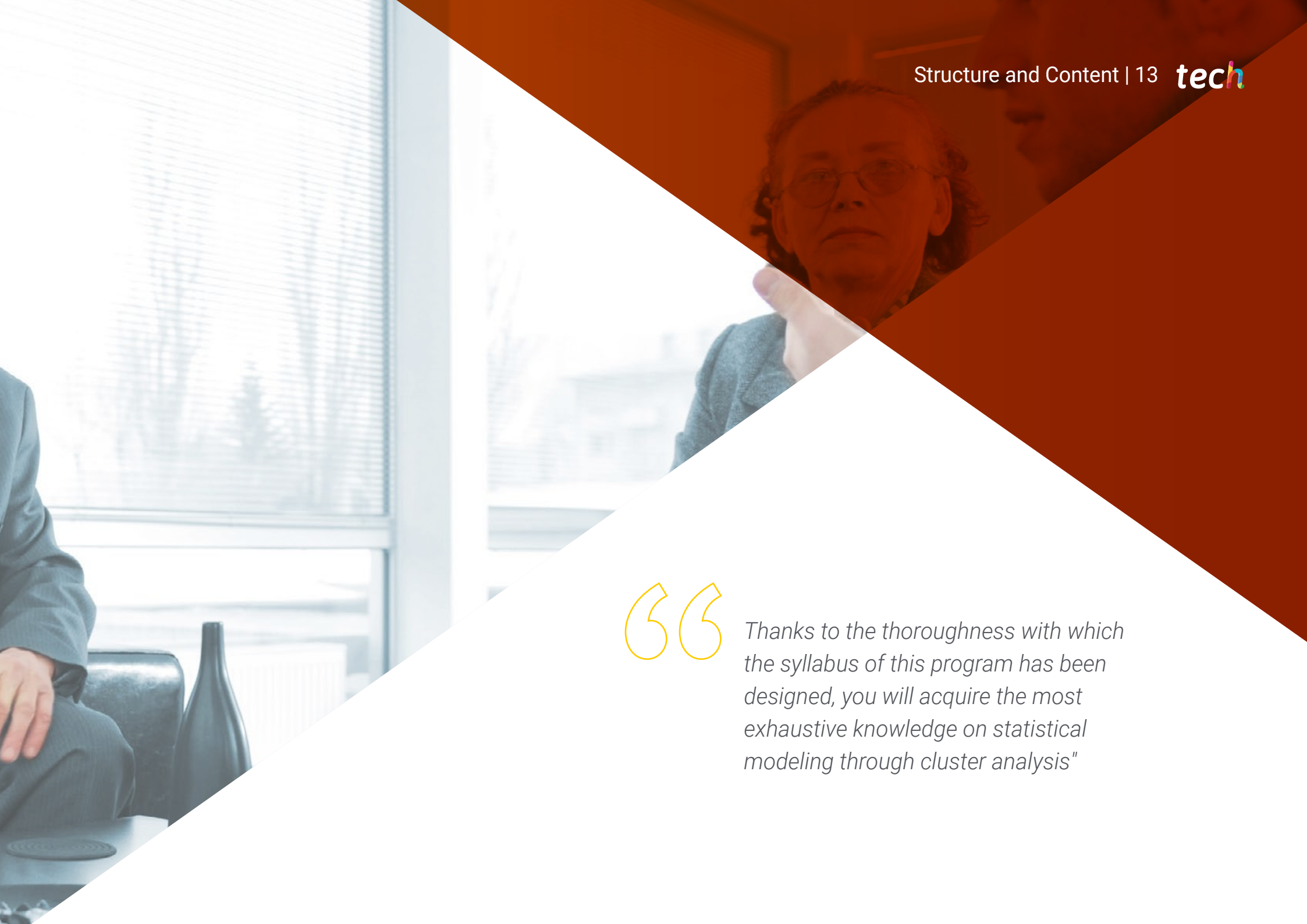
Module 3. Multivariate Statistical Techniques I

- Study and determine the true dimension of multivariate information
- Relate qualitative variables
- Classify individuals into previously established groups based on multivariate information
- Form groups of individuals with similar features

03

Structure and Content

For the development of the structure and content of this Postgraduate Diploma, TECH has taken into consideration the professional criteria of a team of specialists in the field of Applied Statistics. Thanks to this, it has been possible to shape a solid, complete, current and highly capacitating syllabus, which includes the latest developments in estimation and multivariate techniques. In addition, it is a program in which, although the theoretical content has an important weight, the additional and practical material represents a good part of the 450 hours in which it is distributed, providing dynamism and making it a unique and enjoyable academic experience.



Thanks to the thoroughness with which the syllabus of this program has been designed, you will acquire the most exhaustive knowledge on statistical modeling through cluster analysis"

Module 1. Estimations I

1.1. Introduction to Inference Statistics
- 1.1.1. What Is Inference Statistics?
- 1.1.2. Examples

1.2. General Concepts
- 1.2.1. City
- 1.2.2. Sample
- 1.2.3. Sampling
- 1.2.4. Parameter

1.3. Statistical Inference Classification
- 1.3.1. Parametric
- 1.3.2. Non-Parametric
- 1.3.3. Classical Approach
- 1.3.4. Bayesian Approach

1.4. Statistical Inference Objective
- 1.4.1. What Objectives?
- 1.4.2. Statistical Inference Applications

1.5. Distributions Associated with Normal Distribution
- 1.5.1. Chi-Squared
- 1.5.2. T-Student
- 1.5.3. F- Snedecor

1.6. Introduction to Point Estimation
- 1.6.1. Definition of Simple Random Sample
- 1.6.2. Sample Space
- 1.6.3. Statistics and Estimators
- 1.6.4. Examples

1.7. Properties of Estimators
- 1.7.1. Sufficiency and Completeness
- 1.7.2. Factorization Theorem
- 1.7.3. Unbiased and Asymptotically Unbiased Estimators
- 1.7.4. Mean Square Error
- 1.7.5. Efficiency
- 1.7.6. Consistent Estimators
- 1.7.7. Estimating Mean, Variance, and Proportion of a Population

1.8. Procedures to Build estimators
- 1.8.1. Method of Moments
- 1.8.2. Maximum Likelihood Method
- 1.8.3. Properties of Maximum Likelihood Estimators

1.9. Introduction to Interval Estimation
- 1.9.1. Introduction to the Definition of Confidence Interval
- 1.9.2. Pivotal Quantity Method

1.10. Types of Confidence Intervals and their Properties
- 1.10.1. Confidence Intervals for the Mean of a Population
- 1.10.2. Confidence Interval for the Variance of a Population
- 1.10.3. Confidence Intervals for Proportions
- 1.10.4. Confidence Intervals for the Difference of Population Means. Independent Normal Populations. Paired Samples
- 1.10.5. Confidence Interval for the Variance Ratio of Two Independent Normal Populations
- 1.10.6. Confidence Interval for the Difference of Proportions of Two Independent Populations
- 1.10.7. Confidence Interval for a Parameter based on its Maximum Likelihood Estimator
- 1.10.8. Use of a Confidence Interval to Reject Hypotheses or Not

Module 2. Estimations II

2.1. Introduction to Hypothesis Contrasting
- 2.1.1. Problem Statement
- 2.1.2. Null and Alternative Hypothesis
- 2.1.3. Contrast Statistics
- 2.1.4. Types of Error
- 2.1.5. Level of Significance
- 2.1.6. Critical Region. p-value
- 2.1.7. Power

2.2. Types of Hypothesis Contrasting
- 2.2.1. Likelihood Ratio Test
- 2.2.2. Contrasts on Means and Variances in Normal Populations
- 2.2.3. Contrasts on Proportions
- 2.2.4. Relationship between Confidence Intervals and Hypothesis Contrasting

2.3. Introduction to Bayesian Inference
- 2.3.1. A Priori Distributions
- 2.3.2. Conjugate Distributions
- 2.3.3. Reference Distributions

2.4. Bayesian Estimation
- 2.4.1. Point Estimation
- 2.4.2. Estimation of an Proportion
- 2.4.3. Mean Estimate in Normal Populations
- 2.4.4. Comparison to Classical Methods

2.5. Introduction to Non-Parametric Inference Statistics
- 2.5.1. Non-Parametric Statistical Methods: Concepts
- 2.5.2. Use of Non-Parametric Statistics

2.6. Non-Parametric Inference Compared to Parametric Inference
- 2.6.1. Differences between Inferences

2.7. Goodness-of-Fit Test
- 2.7.1. Introduction
- 2.7.2. Graphic Methods
- 2.7.3. Contrast of the Goodness-of-Fit Equation
- 2.7.4. Kolmogorov-Smirnov Test
- 2.7.5. Normality Contrasts

2.8. Independence Contrasts
- 2.8.1. Introduction
- 2.8.2. Randomness Contrasts. Contrast of Spurts
- 2.8.3. Independence Contrasts in Paired Samples
  - 2.8.3.1. Kendall's Contrast
  - 2.8.3.2. Spearman's Ranks Contrast
  - 2.8.3.3. Independence Chi-Square Test
  - 2.8.3.4. Generalization of the Chi-Square Contrast
- 2.8.4. Independence Contrasts in K Related Samples
  - 2.8.4.1. Generalization of the Chi-Square Contrast
  - 2.8.4.2. Kendall's Coefficient of Concordance

2.9. Position Contrast
- 2.9.1. Introduction
- 2.9.2. Position Contrasts for a Single Sample and Paired Samples
  - 2.9.2.1. Sign Test for a Single Sample. Median Test
  - 2.9.2.2. Sign Test for Paired Samples
  - 2.9.2.3. Wilcoxon Signed-Rank Test for a Single Sample
  - 2.9.2.4. Wilcoxon Signed-Rank Test for Paired Samples
- 2.9.3. Non-Parametric Contrasts for Two Independent Samples
  - 2.9.3.1. Wilcoxon-Mann-Whitney's Test
  - 2.9.3.2. Median Test
  - 2.9.3.3. Chi-Square Contrast
- 2.9.4. Position Contrasts for K Independent Samples
  - 2.9.4.1. Kruskal-Wallis Test
- 2.9.5. Independence Contrasts in K Related Samples
  - 2.9.5.1. Friedman's Test
  - 2.9.5.2. Cochran Q Test
  - 2.9.5.3. Kendall W Test

2.10. Homogeneity Contrast
- 2.10.1. Homogeneity Contrasts for Two Independent Samples
  - 2.10.1.1. Wald-Wolfowitz Contrast
  - 2.10.1.2. Kolmogorov-Smirnov Test
  - 2.10.1.3. Chi-Square Contrast

Module 3. Multivariate Statistical Techniques

3.1. Factor Analysis
- 3.1.1. Introduction
- 3.1.2. Fundamentals of Factor Analysis
- 3.1.3. Factor Analysis
- 3.1.4. Factor Rotation Methods and Factor Analysis Interpretation

3.2. Factor Analysis Modeling
- 3.2.1. Examples
- 3.2.2. Statistical Software Modeling

3.3. Main Component Analysis
- 3.3.1. Introduction
- 3.3.2. Main Component Analysis
- 3.3.3. Systematic Principal Component Analysis

3.4. Principal Component Analysis Modeling
- 3.4.1. Examples
- 3.4.2. Statistical Software Modeling

3.5. Correspondence Analysis
- 3.5.1. Introduction
- 3.5.2. Independence Test
- 3.5.3. Row and Column Profiles
- 3.5.4. Inertia Analysis of a Point Cloud
- 3.5.5. Multiple Correspondence Analysis

3.6. Correspondence Analysis Modeling
- 3.6.1. Examples
- 3.6.2. Statistical Software Modeling

3.7. Discriminant Analysis
- 3.7.1. Introduction
- 3.7.2. Decision Rules for Two Groups
- 3.7.3. Classification over Several Populations
- 3.7.4. Fisher's Canonical Discriminant Analysis
- 3.7.5. Choice of Variables: *Forwrad*and *Backward*Procedure
- 3.7.6. Systematic Discriminant Analysis

3.8. Discriminant Analysis Modeling
- 3.8.1. Examples
- 3.8.2. Statistical Software Modeling

3.9. Cluster Analysis
- 3.9.1. Introduction
- 3.9.2. Distance and Similarity Measures
- 3.9.3. Hierarchical Classification Algorithms
- 3.9.4. Non-Hierarchical Classification Algorithms
- 3.9.5. Procedures to Determine the Appropriate Number of Clusters
- 3.9.6. Characterization of Clusters
- 3.9.7. Systematic Cluster Analysis

3.10. Cluster Analysis Modeling
- 3.10.1. Examples
- 3.10.2. Statistical Software Modeling

Take a step further on your way to success in the statistical profession and specialize in a practical, dynamic and highly demanded field in today's job market in only 6 months of training"

04

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 that you are presented with 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

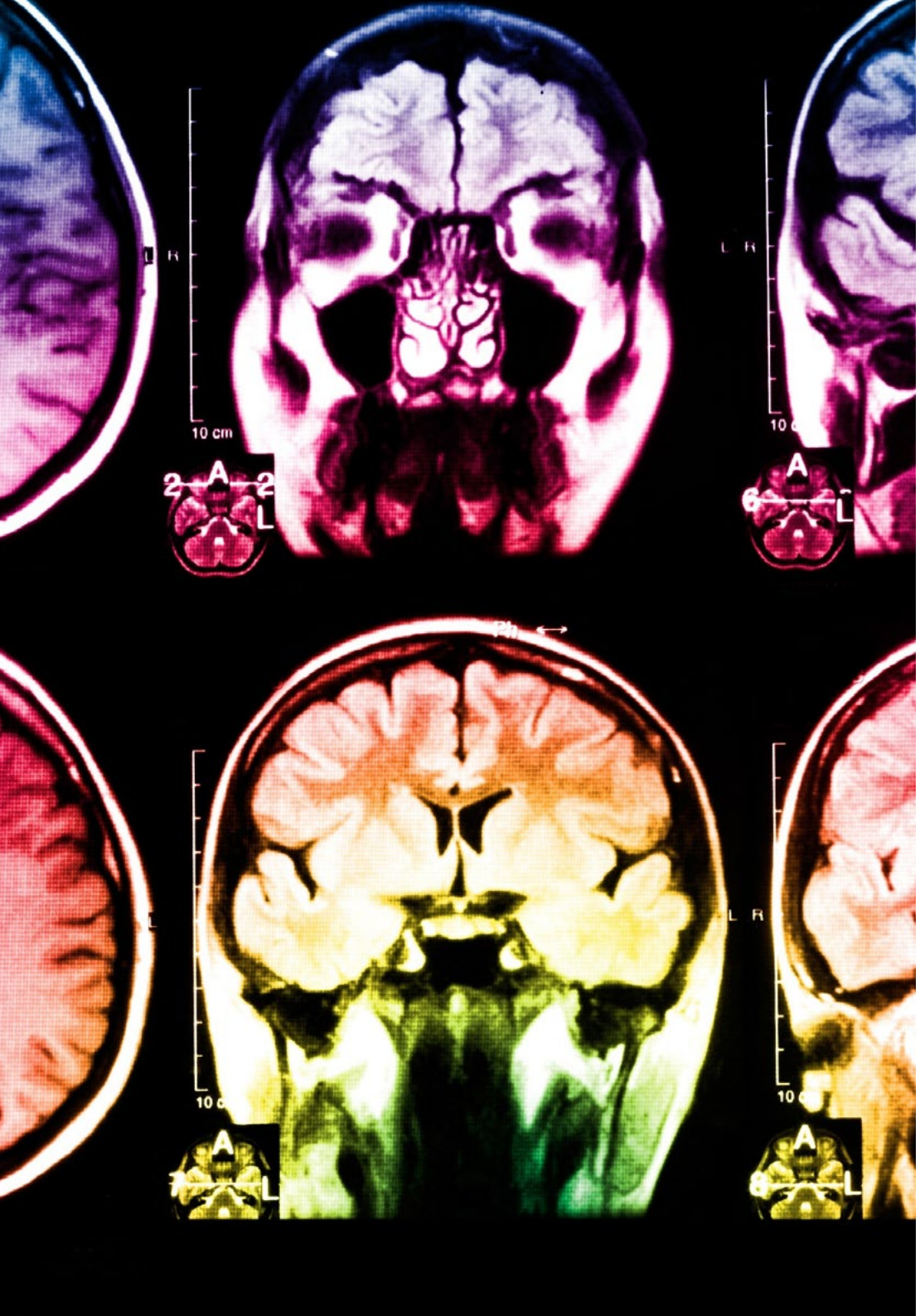
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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. This methodology has 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, and financial markets and 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.

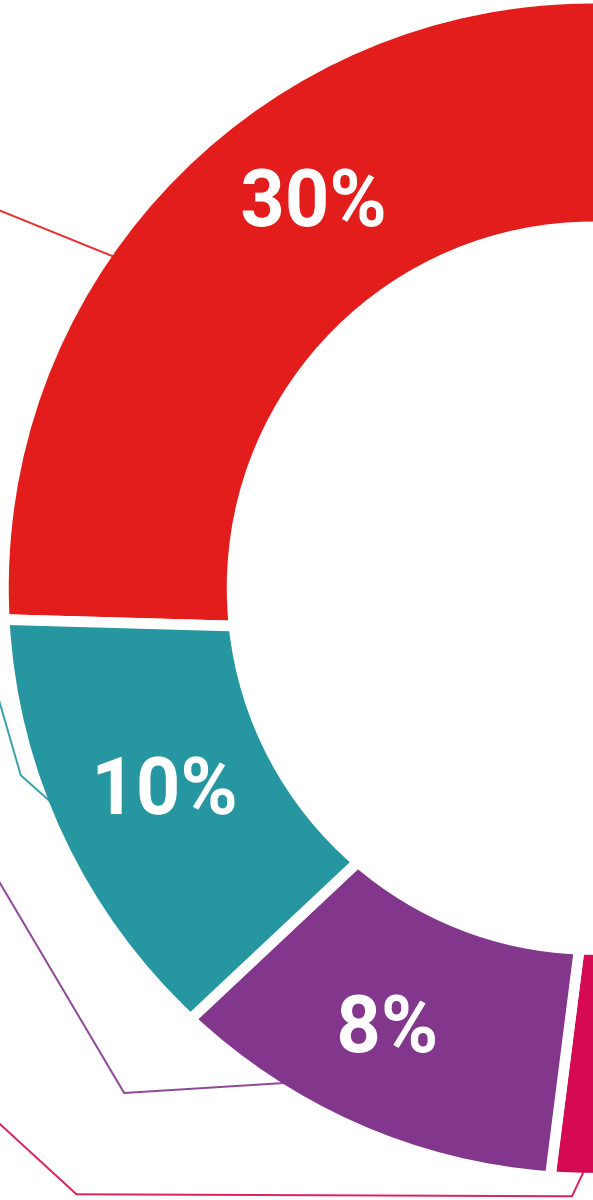
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

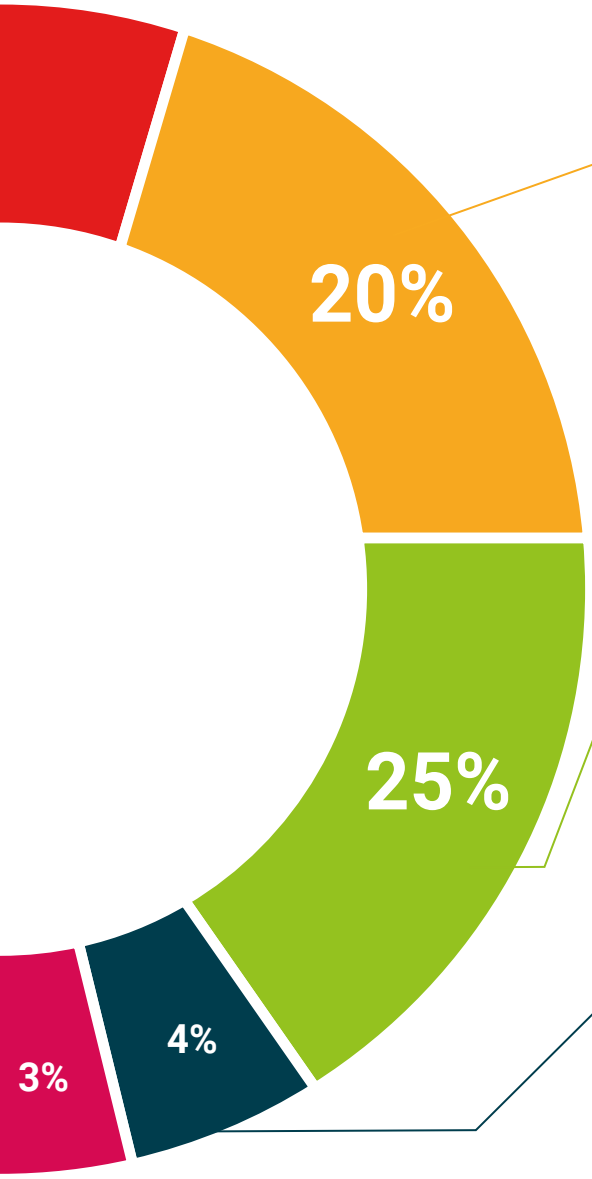
Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject 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 program. 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.

05

Certificate

The Postgraduate Diploma in Statistical Inference 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 Statistical Inference** contains the most complete and up-to-date program 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 diploma 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.

Title: **Postgraduate Diploma in Statistical Inference**

Modality: **online**

Duration: **6 months**


tech technological university

Awards the following

DIPLOMA

to

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

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Statistical Inference

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

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Postgraduate Diploma
Statistical Inference

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Technological University**
- Schedule: **at your own pace**
- Exams: **online**

Postgraduate Diploma
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