

# Postgraduate Diploma Statistics in Economics



## Postgraduate Diploma Statistics in Economics

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

Website: [www.techtitute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-statistics-economics](http://www.techtitute.com/us/engineering/postgraduate-diploma/postgraduate-diploma-statistics-economics)

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# 01

# Introduction

The use of statistics as a technique of analysis in the social sciences, specifically in the economic field, plays a very important role. Thanks to the application of its strategies, it is possible to locate, classify, interpret, choose and distinguish a number of elements for the observation and analysis of the facts under study: trends, future behaviors, possible fluctuations, etc. The exhaustive knowledge of the main statistical systems in correlation with economic indicators allows its professionals to work on it through the classic analysis of time series, something that the graduate will be able to delve into with the course of this program. TECH has designed a complete and dynamic academic experience 100% online through which you will have 450 hours of the best and most diverse content to acquire specialized knowledge on the most effective and efficient econometric methods in economics and finance today.





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*The perfect program to keep you up to date with the main statistical systems and economic indicators in a 100% online format, from wherever you want and with a totally customized schedule”*

Statistics has become a fundamental technique in research processes, especially in the economic field. Thanks to the set of collection, organization, representation, interpretation and analysis procedures, it is possible to implement a series of observations based on common or reiterated behaviors that constitute the basis of future trends on which professionals can focus in order to implement certain projects in relation to the state of the market.

For that reason, and in view of the imminent changes that the Economy and finance sectors are undergoing with the development of digital assets and stock market fluctuations, TECH and its team of experts have developed a comprehensive program focused on this area, perfect to specialize in it 100% online. This is a multidisciplinary, cutting-edge and comprehensive academic experience that will provide you with a wide variety of material to delve in a personalized way into aspects such as statistical systems and economic indicators or the most cutting-edge econometric methods based on dynamic models, data or linear regression. In addition, you will be able to catch up on the latest developments related to the different types of indexes that govern current economic statistics.

All this through a 100% online experience developed over 6 months in which you can access the Virtual Campus without limits or schedules and through any device with Internet connection, either PC, tablet or mobile. Another significant feature of this program is the possibility of downloading all of its content, so that the student can access it even when there is no network connection. In this way, you can design your academic schedule in a flexible way and totally adapted to your availability, so that you can get the most out of the 450 hours of theoretical, practical and additional content that TECH will have at your disposal.

This **Postgraduate Diploma in Statistics in Economics** contains the most complete and up-to-date 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 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
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*Do you know the keys to the statistical system? We will give you a preview: demand, supply and equilibrium. With this Postgraduate Diploma you will work on each of them in an exhaustive way"*

“*The best program in the current academic market to bring you up to date on the latest developments in the different types of indexes and in their application in current statistical and economic research*”

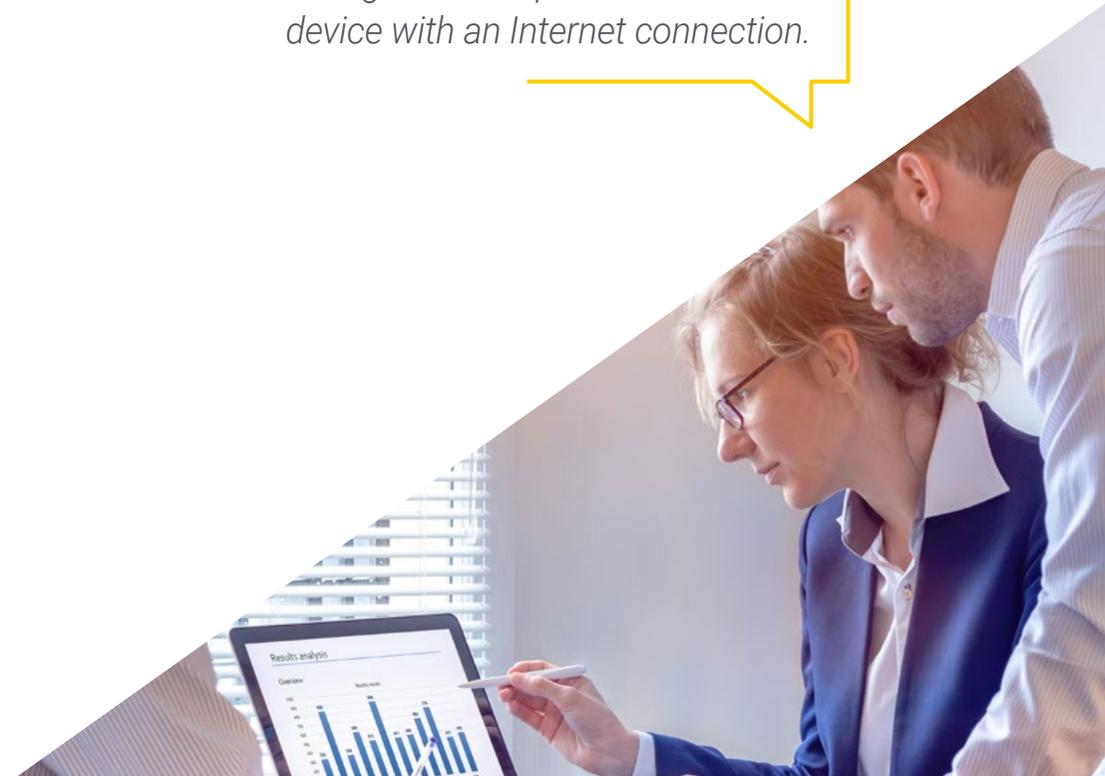
The program includes, in its teaching staff, a team of professionals from the sector who bring to this program the experience of their work, in addition to recognized specialists from prestigious reference societies and universities.

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 student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*No on-site classes, fixed schedules or limited access: this program adapts to your needs and your availability in a guaranteed way.*

*The only requirement you need to access this Postgraduate Diploma is to have a device with an Internet connection.*



# 02 Objectives

This Postgraduate Diploma has been created with the aim that the graduate who accesses it will find in its syllabus all the information that will allow them to specialize in a comprehensive manner in Statistics Applied to the field of Economics in just 6 months. For this reason, TECH will provide you with the best and most advanced academic tools, which not only have a positive influence on learning, but also provide this program with an extra dynamism and quality that will motivate you to get the most out of this academic experience.





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*You will work on short-term and long-term economic analysis, as well as cycles and multiplication techniques to reach equilibrium”*



## General Objectives

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- ◆ Apply their knowledge to their work or vocation in a professional manner and possess the skills that are usually demonstrated through the development and defence of arguments and problem solving within their area of study
- ◆ Perform basic operations related to information debugging
- ◆ Use the appropriate sources of information for each type of applied study



*A program designed with the objective of achieving your own professional goals in a guaranteed way and after just 6 months of professional training”*





## Specific Objectives

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### Module 1. Economic Statistics

- ◆ Study, understand and apply specific methods for the study of the time evolution of a magnitude, such as variation indexes and classical time series analysis

### Module 2. Statistical System and Economic Indicators

- ◆ Describe and analyze the elements on which both the consumer's and the producer's choice depends
- ◆ Calculate the market equilibrium of a good and its changes in response to shifts in the supply and demand curves
- ◆ Describe the agents and characteristics of a perfectly competitive market, and calculate the equilibrium
- ◆ List the characteristics of the financial system and the agents and institutions that form it
- ◆ Explain the concept of macroeconomic equilibrium and its properties using the aggregate supply and demand model

### Module 3. Econometric Methods in Economics and Finance

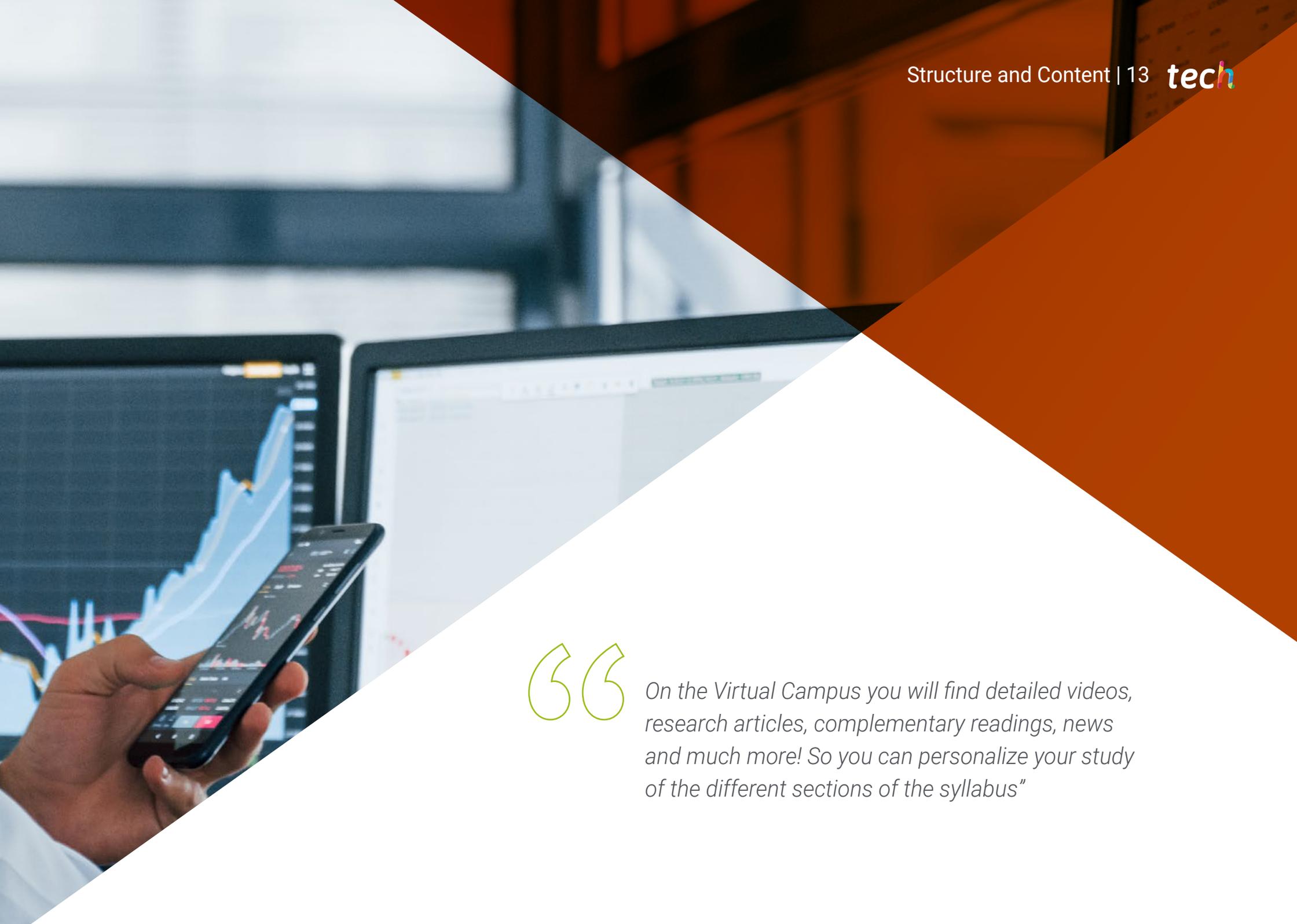
- ◆ Develop analysis and empirical studies in Economics
- ◆ Explain, diagnose and make forecasts on the situation of the main economic and financial variables
- ◆ Review the main sources of statistical information in Economics through the Internet
- ◆ Identify the most appropriate econometric technique for the quantitative study of Economics
- ◆ Perform the application and practice in the specific R software for econometric analysis

03

# Structure and Content

TECH uses in all of its programs the most cutting-edge and accurate content that exists on the subject in question. For this reason, the student who accesses this Postgraduate Diploma will find the best syllabus based on the study of Statistics in Economics, plus a significant amount of additional material in different formats, with which, not only can contextualize the most complex concepts, but can delve into those sections that are of greatest interest. In this way, you will be able to customize not only the schedule, but also the level of the in-depth study.





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*On the Virtual Campus you will find detailed videos, research articles, complementary readings, news and much more! So you can personalize your study of the different sections of the syllabus”*

## Module 1. Economic Statistics

- 1.1. Introduction
  - 1.1.1. Definition and Variations Indexes
  - 1.1.2. Usefulness of Variation Indexes
- 1.2. Classification of Indexes
  - 1.2.1. Simple Indexes
  - 1.2.2. Composite Indexes
- 1.3. Simple Indexes
  - 1.3.1. Rates of Change
- 1.4. Unweighted Composite Indexes
  - 1.4.1. Definition
  - 1.4.2. Properties
- 1.5. Weighted Composite Indexes
  - 1.5.1. Laspeyres Indexes
  - 1.5.2. Paasche Indexes
  - 1.5.3. Edgeworth Indexes
  - 1.5.4. Fisher Indexes
- 1.6. Value Indexes
  - 1.6.1. Definition
  - 1.6.2. Properties
- 1.7. Index Properties
  - 1.7.1. Main Properties
  - 1.7.2. Applications
- 1.8. Operations with Indexes
  - 1.8.1. Renovation
  - 1.8.2. Liaison
  - 1.8.3. Change of Base
- 1.9. Chained Indexes
  - 1.9.1. The Chained Laspeyres Volume Index
- 1.10. Series Valuation
  - 1.10.1. Deflation of Economic Series



**Module 2. Statistical System and Economic Indicators**

- 2.1. Introduction
  - 2.1.1. Economics Field
  - 2.1.2. Three Principles of Economics: Optimality, Equilibrium and Empiricism
  - 2.1.3. Economic Methods and Issues
- 2.2. Demand, Supply and Equilibrium
  - 2.2.1. The Markets
  - 2.2.2. How do Buyers Behave?
  - 2.2.3. How do Sellers Behave?
  - 2.2.4. Supply and Demand in Equilibrium
- 2.3. Consumers, Sellers and Incentives
  - 2.3.1. The Buyer's Problem
  - 2.3.2. From the Buyer's Problem to the Demand Curve
  - 2.3.3. Demand Elasticities and Cost of Living Indices
  - 2.3.4. Consumer Surplus
  - 2.3.5. The Seller's Problem
  - 2.3.6. From the Seller's Problem (In a Competitive Market) to the Supply Curve
  - 2.3.7. The Producer's Surplus
- 2.4. Perfect Competition and the Invisible Hand
  - 2.4.1. Perfect Competition and Efficiency
  - 2.4.2. Prices Drive the Invisible Hand
  - 2.4.3. Equity and Efficiency
- 2.5. Macroeconomics and its Evolution
  - 2.5.1. Real and Nominal GDP. Price Indexes
  - 2.5.2. Macroeconomic Issues
  - 2.5.3. What GDP Does Not Measure
  - 2.5.4. National Accounts: GDP, its Measurement and its Limits
- 2.6. Analysis of Differences in the Standard of Living between Countries
  - 2.6.1. Income as a Measurement Element
  - 2.6.2. The Aggregate Production Function and Productivity
  - 2.6.3. Technology

- 2.7. Economic Growth
  - 2.7.1. The Importance of Economic Growth
  - 2.7.2. Sources of Economic Growth
  - 2.7.3. Introduction to Growth Accounting
  - 2.7.4. Growth, Inequality and Poverty
- 2.8. Short-Term Economic Analysis
  - 2.8.1. Business Cycles
  - 2.8.2. Macroeconomic Equilibrium and Cycles
  - 2.8.3. Multipliers and Short- and Medium-Term Equilibrium
- 2.9. Stabilizing Policies
  - 2.9.1. Monetary Policy
  - 2.9.2. Fiscal Policy
- 2.10. Macroeconomics and International Trade
  - 2.10.1. The Advantages of International Trade
  - 2.10.2. Accounting for International Trade
  - 2.10.3. International Trade and Economic Growth

### Module 3. Econometric Methods in Economics and Finance

- 3.1. Introduction to the Use of R
  - 3.1.1. Main Commands
  - 3.1.2. Necessary Packages
- 3.2. Introduction to Econometrics
  - 3.2.1. Nature and Content of Econometrics
  - 3.2.2. Economic Modeling
- 3.3. Linear Regression
  - 3.3.1. The General Linear Model (GLM)
  - 3.3.2. Model Hypotheses
  - 3.3.3. Ordinary Least Squares (OLS) Estimation
  - 3.3.4. Inference and Prediction in the GLM
  - 3.3.5. Structural Change Contrasts
  - 3.3.6. Multicollinearity and Measurement Errors



- 3.4. Models with Cross-Section Data
  - 3.4.1. Causes of Heteroscedasticity
  - 3.4.2. Heteroscedasticity Contrasts
  - 3.4.3. The Generalized Least Squares Estimator
  - 3.4.4. The Feasible Weighted Least Squares Estimator
- 3.5. Models with Time Series Data
  - 3.5.1. Magic "Potagia" or the Spurious Regressions
  - 3.5.2. Stationarity and Unit Roots
  - 3.5.3. Non-Stationarity and Cointegration
  - 3.5.4. Cointegration and Error Correction Mechanisms (ECMs)
  - 3.5.5. Regression Models with Stationary Time Series: Autocorrelation
  - 3.5.6. The Generalized Least Squares Estimator (GLS)
  - 3.5.7. Leading Indicators: Granger Causality and Contemporaneous Correlation
- 3.6. Stationary Dynamic Models
  - 3.6.1. Stationary Dynamic Models
    - 3.6.1.1. ARIMA
    - 3.6.1.2. ARIMAX
  - 3.6.2. Estimation of ARIMA Models
  - 3.6.3. Diagnosis of ARIMA Models
- 3.7. Endogeneity, Instrumental Variables and MC2E
  - 3.7.1. What is the Endogeneity Problem, What Problems Does It Cause?
  - 3.7.2. Origins of Endogeneity
    - 3.7.2.1. Omission of Some Relevant Variable (Because It Is Not Observable) That Is Correlated with Some Other Explanatory Variable
    - 3.7.2.2. Errors in the Measurement
    - 3.7.2.3. Regression Model with Lags and Autocorrelation in Errors
  - 3.7.3. Instrumental Variables Estimator and Two-Stage Least Squares (MC2E)
  - 3.7.4. Endogeneity Contrasts and Overestimation Constraints
- 3.8. Regression Models with Panel Data
  - 3.8.1. Specification of Panel Data Models
  - 3.8.2. Estimation of Models with Fixed Effects
  - 3.8.3. Estimation of Models with Random Effects
  - 3.8.4. System of Apparently Unrelated Equations
- 3.9. Spatial Econometric Models
  - 3.9.1. Introduction to Statistics and Measures of Spatial Association
  - 3.9.2. The Construction of the Distance Matrix for Measuring Spatial Dependencies
  - 3.9.3. Model specifications with spatial dependence
    - 3.9.3.1. Error Model with Spatial Delays
    - 3.9.3.2. The Model with Spatially Autoregressive Errors
  - 3.9.4. Ordinary Least Squares Problems for Estimating Spatially Delayed Models and the Two-Stage Least Squares Estimator
- 3.10. Quantile Regression Models
  - 3.10.1. Regression on Means and Quantile Regression
  - 3.10.2. Interquantile Regression Estimation
  - 3.10.3. Graphical Representation of the Solution



*You are just one click away from joining a program that will bring your professional talent as a Statistics in Economics specialist to the highest level"*

# 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.





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*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.

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*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.



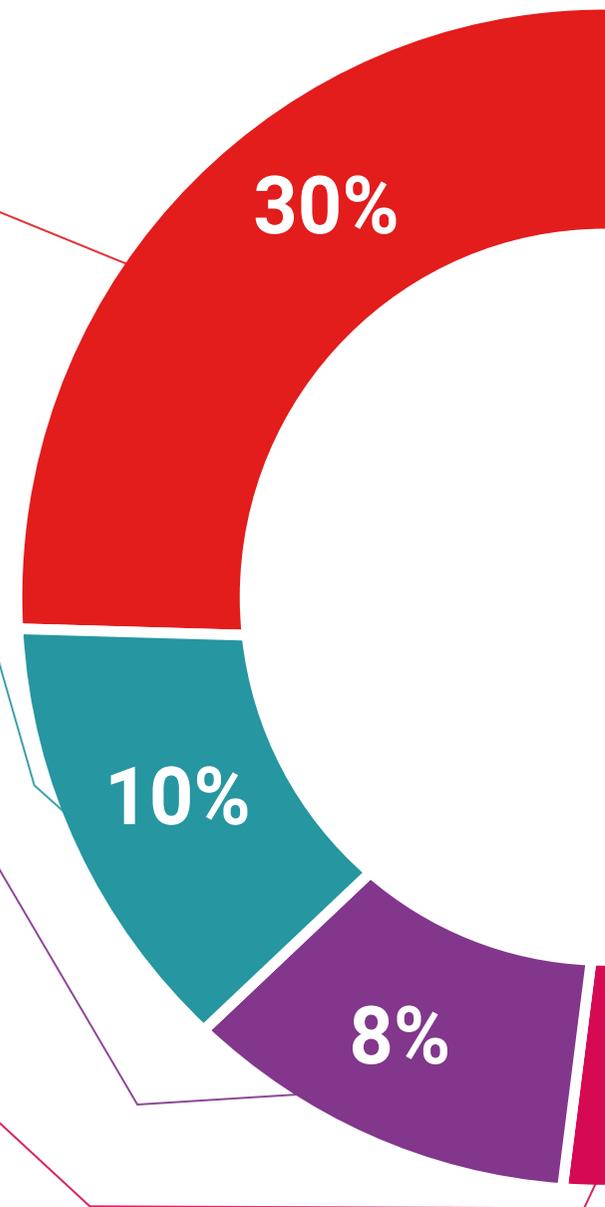
### Practising Skills and Abilities

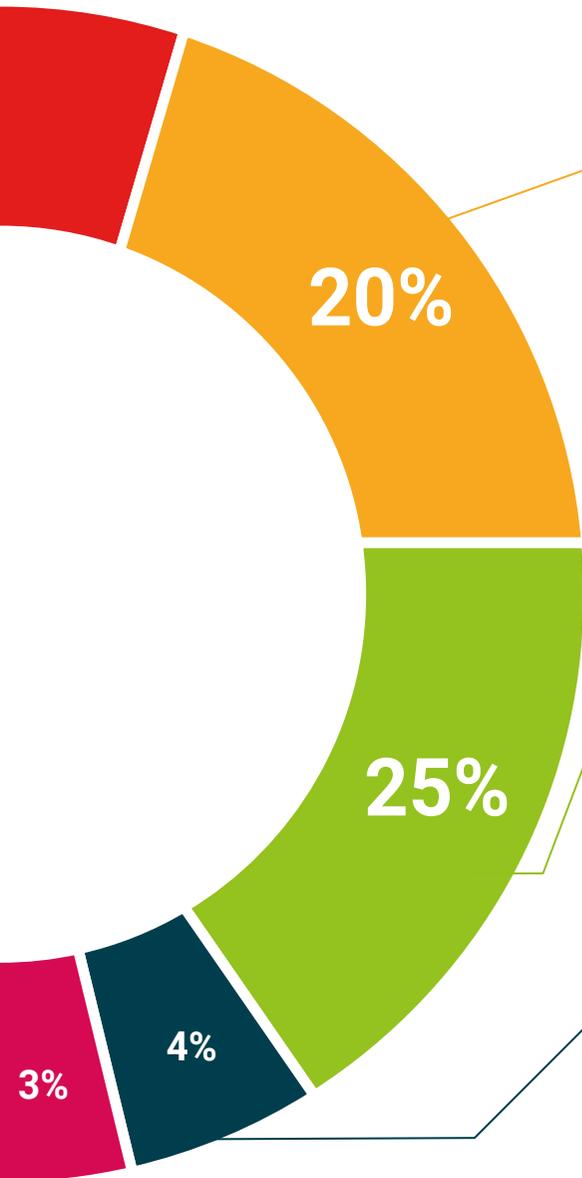
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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 Statistics in Economics guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



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

This **Postgraduate Diploma in Statistics in Economics** 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 Statistics in Economics**

Official N° of hours: **450 h.**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present quality

development language

virtual classroom

**tech** technological  
university

## Postgraduate Diploma Statistics in Economics

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