

# Postgraduate Certificate

## Time Series and Forecast for Data Analysis





## Postgraduate Certificate Time Series and Forecast for Data Analysis

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online
- » Target Group: Computer engineers who wish to reorient their work towards the world of data analytics and business intelligence, or established professionals in this field who need to update, delve deeper and improve their skills and knowledge

Website: [www.techtitude.com/in/school-of-business/postgraduate-certificate/time-series-forecast-data-analysis](http://www.techtitude.com/in/school-of-business/postgraduate-certificate/time-series-forecast-data-analysis)

# Index

01

Welcome

---

*p. 4*

02

Why Study at TECH?

---

*p. 6*

03

Why Our Program?

---

*p. 10*

04

Objectives

---

*p. 14*

05

Structure and Content

---

*p. 18*

06

Methodology

---

*p. 24*

07

Our Students' Profiles

---

*p. 32*

08

Course Management

---

*p. 36*

09

Impact on Your Career

---

*p. 40*

10

Benefits for Your Company

---

*p. 44*

11

Certificate

---

*p. 48*

# 01 Welcome

In the 21st century, technology allows the generation of large amounts of data, a source of incalculable business value, which requires the use of innovative techniques to process and analyze them. For this reason, this program has been designed to allow the professional to deeply analyze time series and their different models. These, together with the *forecast*, will help you to make the best sales, profit and loss forecasts for your company. Therefore, this program will allow you to bring your company closer to success thanks to the data that you will be able to collect from the tools obtained.



Postgraduate Certificate in Time Series and Forecast for Data Analysis.  
TECH Technological University

“

*Apply the fundamentals of time series modeling and forecasting methodology and excel professionally in a field that is in high demand at the enterprise level"*

02

# Why Study at TECH?

TECH is the world's largest 100% online business school. It is an elite business school, with a model based on the highest academic standards. A world-class center for intensive managerial skills education.



“

*TECH is a university at the forefront of technology, and puts all its resources at the student's disposal to help them achieve entrepreneurial success"*

## At TECH Technological University



### Innovation

The university offers an online learning model that balances the latest educational technology with the most rigorous teaching methods. A unique method with the highest international recognition that will provide students with the keys to develop in a rapidly-evolving world, where innovation must be every entrepreneur's focus.

"*Microsoft Europe Success Story*", for integrating the innovative, interactive multi-video system.



### The Highest Standards

Admissions criteria at TECH are not economic. Students don't need to make a large investment to study at this university. However, in order to obtain a qualification from TECH, the student's intelligence and ability will be tested to their limits. The institution's academic standards are exceptionally high...

**95%**

of TECH students successfully complete their studies



### Networking

Professionals from countries all over the world attend TECH, allowing students to establish a large network of contacts that may prove useful to them in the future.

**+100000**

executives prepared each year

**+200**

different nationalities



### Empowerment

Students will grow hand in hand with the best companies and highly regarded and influential professionals. TECH has developed strategic partnerships and a valuable network of contacts with major economic players in 7 continents.

**+500**

collaborative agreements with leading companies



### Talent

This program is a unique initiative to allow students to showcase their talent in the business world. An opportunity that will allow them to voice their concerns and share their business vision.

After completing this program, TECH helps students show the world their talent.



### Multicultural Context

While studying at TECH, students will enjoy a unique experience. Study in a multicultural context. In a program with a global vision, through which students can learn about the operating methods in different parts of the world, and gather the latest information that best adapts to their business idea.

TECH students represent more than 200 different nationalities.

TECH strives for excellence and, to this end, boasts a series of characteristics that make this university unique:



### Analysis

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TECH explores the student's critical side, their ability to question things, their problem-solving skills, as well as their interpersonal skills.



### Academic Excellence

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TECH offers students the best online learning methodology. The university combines the *Relearning* methodology (the most internationally recognized postgraduate learning methodology) with Harvard Business School case studies. A complex balance of traditional and state-of-the-art methods, within the most demanding academic framework.



### Economy of Scale

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TECH is the world's largest online university. It currently boasts a portfolio of more than 10,000 university postgraduate programs. And in today's new economy, **volume + technology = a ground-breaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.



### Learn with the best

---

In the classroom, TECH's teaching staff discuss how they have achieved success in their companies, working in a real, lively, and dynamic context. Teachers who are fully committed to offering a quality specialization that will allow students to advance in their career and stand out in the business world.

Teachers representing 20 different nationalities.



*At TECH, you will have access to the most rigorous and up-to-date case analyses in academia"*

03

# Why Our Program?

Studying this TECH program means increasing the chances of achieving professional success in senior business management.

It is a challenge that demands effort and dedication, but it opens the door to a promising future. Students will learn from the best teaching staff and with the most flexible and innovative educational methodology.



“

*We have highly qualified teachers and the most complete syllabus on the market, which allows us to offer you education of the highest academic level"*

This program will provide you with a multitude of professional and personal advantages, among which we highlight the following:

01

### A Strong Boost to Your Career

By studying at TECH, students will be able to take control of their future and develop their full potential. By completing this program, students will acquire the skills required to make a positive change in their career in a short period of time.

*70% of students achieve positive career development in less than 2 years.*

02

### Develop a strategic and global vision of the company

TECH offers an in-depth overview of general management to understand how each decision affects each of the company's different functional fields.

*Our global vision of companies will improve your strategic vision.*

03

### Consolidate the student's senior management skills

Studying at TECH means opening the doors to a wide range of professional opportunities for students to position themselves as senior executives, with a broad vision of the international environment.

*You will work on more than 100 real senior management cases.*

04

### You will take on new responsibilities

The program will cover the latest trends, advances and strategies, so that students can carry out their professional work in a changing environment.

*45% of graduates are promoted internally.*

05

### Access to a powerful network of contacts

TECH connects its students to maximize opportunities. Students with the same concerns and desire to grow. Therefore, partnerships, customers or suppliers can be shared.

*You will find a network of contacts that will be instrumental for professional development.*

06

### Thoroughly develop business projects

Students will acquire a deep strategic vision that will help them develop their own project, taking into account the different fields in companies.

*20% of our students develop their own business idea.*

07

### Improve soft skills and management skills

TECH helps students apply and develop the knowledge they have acquired, while improving their interpersonal skills in order to become leaders who make a difference.

*Improve your communication and leadership skills and enhance your career.*

08

### You will be part of an exclusive community

Students will be part of a community of elite executives, large companies, renowned institutions, and qualified teachers from the most prestigious universities in the world: the TECH Technological University community.

*We give you the opportunity to study with a team of world-renowned teachers.*

# 04 Objectives

The main objective of this Postgraduate Certificate is to strengthen the student's knowledge in the field of time series. In this way, TECH guarantees that students will develop their professional goals in a competitive environment. Throughout the 150 hours of learning that make up this program, students will be able to better understand the concepts of univariate models, dynamic regression and niche construction methodology. This way, after completing the program, the professional will be able to make global decisions with an innovative perspective and an international vision.



“

*Apply the best dynamic regression models, as well as the methodology of building such models from observed series and direct your objectives to be the best professional in your work environment"*

TECH makes the goals of their students their own goals too.

Working together to achieve them.

The **Postgraduate Certificate in Time Series and Forecasting for Data Analysis** enables the student to:

01

Develop advanced knowledge of time series

02

Identify the pattern and characteristics of time series

03

Predict the behavior of a time series, based on the knowledge of the models studied

04

Develop specialized knowledge of time series

05

Develop the formulation and basic properties of univariate time series models



06

Apply the fundamentals of real time series modeling and forecasting methodology

08

Apply dynamic regression models, as well as the methodology for the construction of such models from observed series

09

Establish the theoretical foundations of spectral analysis of univariate time series, as well as the fundamental aspects related to inference based on the eriodogram and its interpretation

07

Analyze univariate models including outliers

10

Estimate the probability and trend in time series for a given time horizon

05

# Structure and Content

The Postgraduate Certificate in Time Series and Forecast for Data Analysis is the ideal opportunity to learn about the models that allow the analysis of stochastic phenomena. Thanks to the partnership with an excellent group of experts, TECH has devised a program that meets all the requirements and demands of a booming sector. In this way, the student will be able to better understand the most commonly used models to predict the behavior of a time series, improving the economic performance of his company.



“

*You will lead your company to success thanks to the data analysis techniques that you will acquire in the development of this Postgraduate Certificate"*

## Syllabus

It is essential in this new era to have professionals who are capable of exploring and extracting knowledge that adds value and supports the decisions they make in any professional field. In this sense, analyzing stochastic phenomena has become the main objective of time series models. In this Postgraduate Certificate, special emphasis will be given to those models that represent greater versatility and adaptation for the analysis of these systems.

Therefore, during the development of this program, it will be possible to delve into the theoretical foundations on the spectral analysis of univariate time series, as well as the fundamental aspects related to inference based on the eriodogram and its interpretation.

All the knowledge contained in this program is supported by the experience of an excellent teaching staff that, in a dynamic and practical way, will present several examples applicable to the student's daily work.

For these reasons, this Postgraduate Certificate is perfect for those professionals who wish to add value to their companies, based on the deep, detailed and accurate analysis of data.

This Postgraduate Certificate takes place over 6 weeks and it consists of 1 module:

### Module 1

### Time Series and Forecast for Data Analysis



### Where, When and How is it Taught?

TECH offers the possibility of developing this Postgraduate Certificate in Time Series and Forecast for Data Analysis completely online. During the 6 weeks that the specialization program lasts, the student will be able to access all the contents of this program at any time, which will allow them to manage their own study time.

*A unique educational experience, key and decisive to boost your professional development and make the definitive leap.*

## Module 1. Time Series and Forecast for Data Analysis

### 1.1. Time Series

- 1.1.1. Objectives
- 1.1.2. Application

### 1.2. Components of a time series

- 1.2.1. Trend component - Seasonal
- 1.2.2. Cycle
- 1.2.3. Waste

### 1.3. Types of time series

- 1.3.1. Stationary time series
- 1.3.2. Stationary time series
- 1.3.3. Box-Cox Transformation

### 1.4. Basic Forecasting Methods

- 1.4.1. Media
- 1.4.2. Naïve
- 1.4.3. Seasonal Naïve
- 1.4.4. Method Comparison

### 1.5. Waste Analysis

- 1.5.1. Autocorrelation
- 1.5.2. ACF of Waste
- 1.5.3. Correlation Test

### 1.6. Predictive Methods of Time Series

- 1.6.1. ARIMA
- 1.6.2. RMA
- 1.6.3. Exponential Smoothing

### 1.7. Measures of forecast accuracy

- 1.7.1. MAE
- 1.7.2. MSE
- 1.7.3. RMSE
- 1.7.4. MAPE

### 1.8. Forecasting Stages

- 1.8.1. Model identification
- 1.8.2. Estimate
- 1.8.3. Verification-Prediction

### 1.9. Manipulation and Analysis of Time Series with R

- 1.9.1. Data Preparation
- 1.9.2. Identification of Patterns
- 1.9.3. Model Analysis
- 1.9.4. Prediction

### 1.10. Combined Graphical Analysis with R

- 1.10.1. Application of graphical analysis combined with R



“

*If your company needs a change, here is the answer: consolidate your career in time series analysis and add value to your business decisions"*

# 06 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"*

## TECH Business School uses the 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*”



*This program prepares you to face business challenges in uncertain environments and achieve business success.*



*Our program prepares you to face new challenges in uncertain environments and achieve success in your career.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. 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 business reality is taken into account.

**“** *You will learn, through collaborative activities and real cases, how to solve complex situations in real business environments”*

The case method has been the most widely used learning system among the world's leading business schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, 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 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*Our online system will allow you to organize your time and learning pace, adapting it to your schedule. You will be able to access the contents from any device with an internet connection.*

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 online business school is the only one in the world licensed to incorporate this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

With this methodology we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to 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.



#### Management Skills Exercises

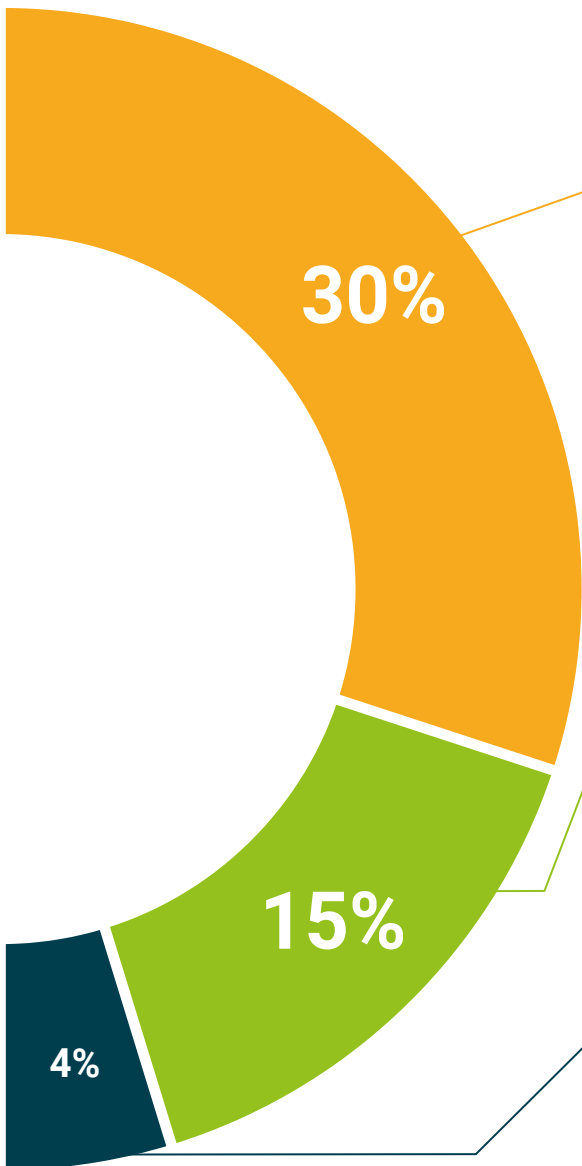
They will carry out activities to develop specific executive competencies in each thematic area. Practices and dynamics to acquire and develop the skills and abilities that a high-level manager needs to develop in the context of the globalization we live in.



#### 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 senior management 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.



07

# Our Students' Profiles

This Postgraduate Certificate in Time Series and Forecast for Data Analysis is aimed primarily at those professionals in the economic and business sciences who wish to delve into the latest techniques in economic forecasting analysis of a company. In addition, this program is oriented to ambitious people who wish to advance and lead their organizations to success.



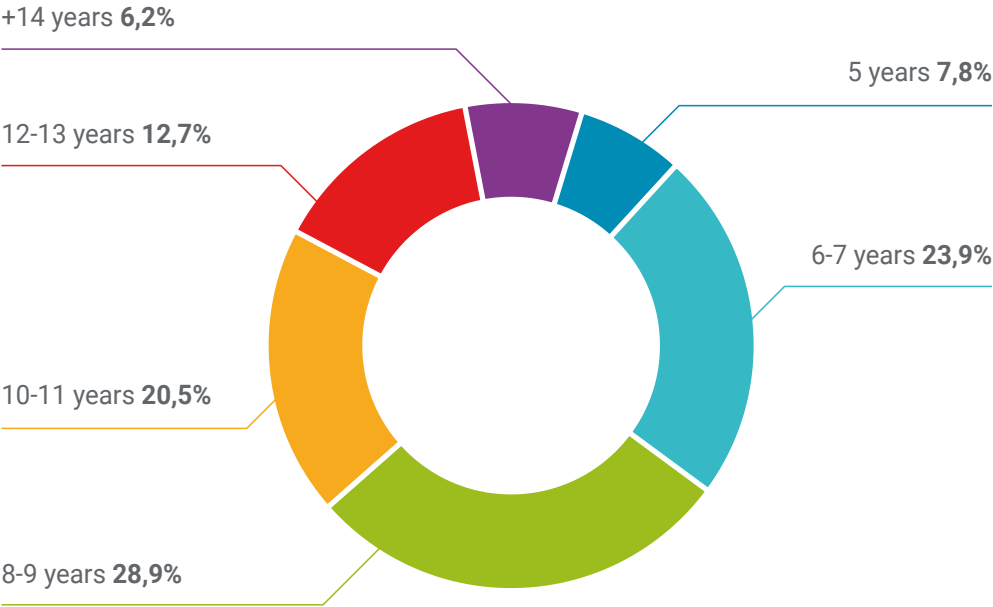
“

*If you are ambitious and looking for professional progress, this is the program for you. Don't wait any longer, success is just around the corner"*

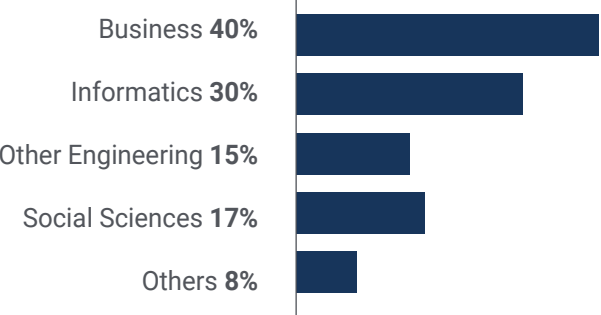
Average Age

Between **35** and **45** years old

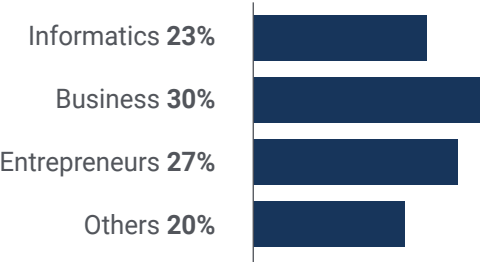
Years of Experience



Training

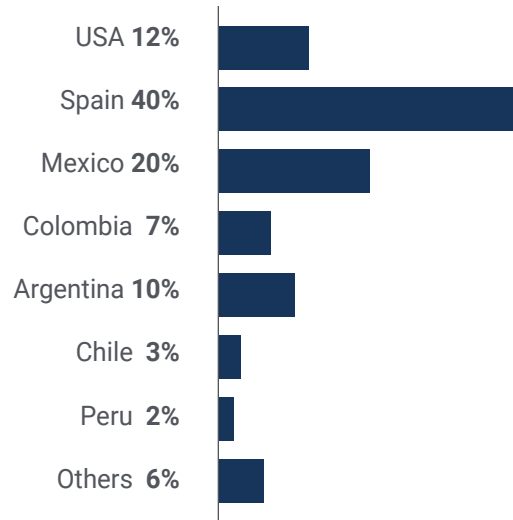


Educational Profile



## Geographical Distribution

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## Andrés García

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Business Intelligence Analyst

*"With this program I have had the opportunity to develop my skills to analyze the different phenomena that can harm or benefit the company I work for. This has meant a 5% increase in productivity in the department. I am very happy with TECH and its learning system"*

08

# Course Management

In order to learn how to analyze stochastic phenomena that evolve over time, it is essential to have a highly qualified teaching team to transmit the essential knowledge to students. Consequently, TECH has an experienced faculty that has been assembled to promote the development of this syllabus. Therefore, throughout this program, the student will be able to learn directly from these teachers, acquiring the keys to analyze data from the forecast and time series.



“

*The most experienced and specialized teaching team is waiting for you to transfer all their knowledge quickly and efficiently"*

## Management



### Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO en Corporate Technologies in Corporate Technologies
- CTO in AI Shephers GmbH
- Doctorate in Psychology from the University of Castilla
- PhD in Economics, Business and Finance from the Camilo José Cela University. Outstanding Award in her PhD
- Master's Degree in Advanced Information Technologies from the University of Castilla la Mancha
- Master MBA+E (Master's Degree in Business Administration and Organisational Engineering) from the University of Castilla la Mancha
- Associate lecturer, teaching undergraduate and master's degrees in Computer Engineering at the University of Castilla la Mancha
- Professor of the Master in Big Data and Data Science at the International University of Valencia
- Lecturer of the Master's Degree in Industry 4.0 and the Master's Degree in Industrial Design and Product Development
- Member of the SMILe Research Group of the University of Castilla la Mancha



## Professors

### **Ms. Fernández Meléndez, Galina**

- ♦ Data Analyst in ADN Mobile Solution
- ♦ ETL processes, data mining, data analysis and visualisation, establishment of KPI's, Dashboard design and implementation, management control ADN Mobile Solution-Gijón-Spain R development, SQL management, among others
- ♦ Pattern determination, predictive modelling, machine learning
- ♦ Bachelor's degree in Business Administration. Bicentenario de Aragua-Caracas University
- ♦ Diploma in Planning and Public Finance Venezuelan School of Planning, School of Finance
- ♦ Professional Master's Degree in Data Analysis and Business Intelligence. University of Oviedo
- ♦ MBA in Business Administration and Management (Escuela De Negocios Europea de Barcelona)
- ♦ Master in Big Data and Business Intelligence (Escuela de Negocios Europea de Barcelona)

09

# Impact on Your Career

Taking into account the current economic situation, whose fluctuations make the work of companies very complex, this program prepares the professional to become a specialist in economic forecasting, therefore preparing them to become a sought-after and respected figure in many companies. In this way, this program is perfect for those who wish to experience immediate career advancement by delving into forecasting and time series.



“

*TECH's priority is to prepare professionals for the challenges of the future. This Postgraduate Certificate is a great opportunity for them to achieve this goal"*

## Are you ready to take the leap? Excellent professional development awaits you

TECH's Postgraduate Certificate in Time Series and Forecast for Data Analysis is an intensive program that prepares you to face challenges and business decisions in the field of business intelligence. The main objective is to promote your personal and professional growth. Helping you achieve success.

If you want to improve, make a positive change at a professional level and network with the best, then this is the place for you.

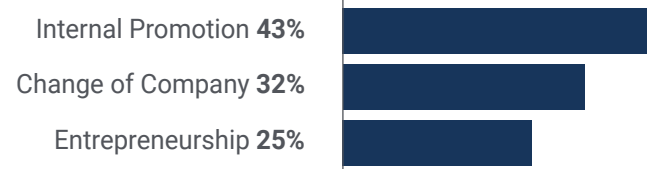
*Forecasting is essential  
for any company,  
so this program will  
prepare you to become  
a highly sought-after  
professional in your  
environment.*

*You will enjoy the best  
professional opportunities  
thanks to this Postgraduate  
Certificate.*

### Time of Change



### Type of change



## Salary increase

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The completion of this program represents a salary increase of more than **25%** for our students.



10

# Benefits for Your Company

This Postgraduate Certificate in Time Series and Forecasting for Data Analysis is an essential contribution to any company, since the knowledge it contains will enable it to make rapid progress by being able to foresee risks and strengths in its future operations and activities. Therefore, having a professional with these skills will help the organization to progress quickly.



“

*You will master time series and forecasting thanks to this program, which will allow you to give a big boost to your company with the tools you will be able to master"*

Developing and retaining talent in companies is the best long-term investment.

01

### **Growth of talent and intellectual capital**

The professional will introduce the company to new concepts, strategies, and perspectives that can bring about significant changes in the organization.

---

02

### **Retaining high-potential executives to avoid talent drain**

This program strengthens the link between the company and the professional and opens new avenues for professional growth within the company.

03

### **Building agents of change**

You will be able to make decisions in times of uncertainty and crisis, helping the organization overcome obstacles.

---

04

### **Increased international expansion possibilities**

Thanks to this program, the company will come into contact with the main markets in the world economy.



05

### **Project Development**

The professional can work on a real project or develop new projects in the field of R & D or business development of your company.

---

06

### **Increased competitiveness**

This program will equip students with the skills to take on new challenges and drive the organization forward.

# 11 Certificate

The Postgraduate Certificate in Time Series and Forecast for Data Analysis guarantees students, in addition to the most rigorous and up-to-date, 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 Time Series and Forecast for Data Analysis** contains the most complete and updated program 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 Time Series and Forecast for Data Analysis**

Official N° of Hours: **150 h.**





## Postgraduate Certificate Time Series and Forecast for Data Analysis

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

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