Postgraduate Diploma

Forecasting

tech global university

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Postgraduate Diploma

Forecasting

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Accreditation: **18 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

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

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01

Introduction

Will the share price of a certain company increase? Will a marketing campaign be successful? Which candidate will be elected in the next election? Although there is currently no technique that allows humans to determine with totalaccuracy what will happen in the future, thanks to statistical prediction it is possible to estimate, with greater or lesser probability and based on the comparison or contrast of data obtained from similar past contexts, what is expected to happen. It is precisely in this area that the program TECH and its team of experts have designed is based on the most innovative prediction methods in Statistics. This is a highly empowering academic experience thanks to which you will be able to specialize in this field in a 100% online way, being able to implement the most innovative and effective multivariate and linear estimation strategies in your practice.

Would you like to become a University Expert in Forecasting but don't have time to attend on-site classes? Then, you are before the perfect option to achieve it. Do you trust TECH?"

Human behavior, social trends, the results of a political campaign, the development of science, armed conflicts or the epidemiology of a disease are just a few activities in which Statistical Forecasting plays a fundamental role in the estimation of what will happen in the future of each of them and, therefore, in their evolution. Although it is not an exact science, probability, based on the existing conditions of a given context, is capable of establishing, with a minimum margin of error, the optimal plan of action to achieve the best results.

Anticipating what will happen based on the exhaustive study of the structural keys of a project has allowed millions of public and private entities to develop business, social and economic strategies thanks to which they have achieved success. For this reason, and in order to provide all those interested in this area with the information that will allow them to get up to date on the advances that have been made in multivariate statistics and advanced forecasting, TECH and its team of professionals have developed this very complete Postgraduate Diploma. Through 540 hours of theoretical and practical education, graduates will be able to delve into the latest developments in the different linear estimation models, as well as the most innovative tools for their application in different current contexts. They will also work with the different scales, from nominal to interval or ratio scales, concluding with an exhaustive analysis of the multiple regression techniques, their characteristics and the advantages and disadvantages of their use in certain cases.

And to overcome all the requirements of the qualification, you will have 6 months to access, without schedules, to the Virtual Campus and to complete the 3 modules that it includes. In addition, you will be provided with additional high-quality material presented in different formats, so that you can delve in a personalized way into the aspects you consider most important or relevant for your professional development and performance. It is, therefore, a unique opportunity to specialize in the field of Statistical Forecasting through a 100% online educational experience that adapts to you, your needs and the most demanding requirements of today's labor market.

This **Postgraduate Diploma in Forecasting** 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 practicex
- 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 on the current educational market to delve into the linear prediction methods thatare setting the trend in the field of Applied Statistics"

You will work with the most comprehensive and diverse information on multivariate statistical techniques, from nominal scale to binary logistic regression modeling"

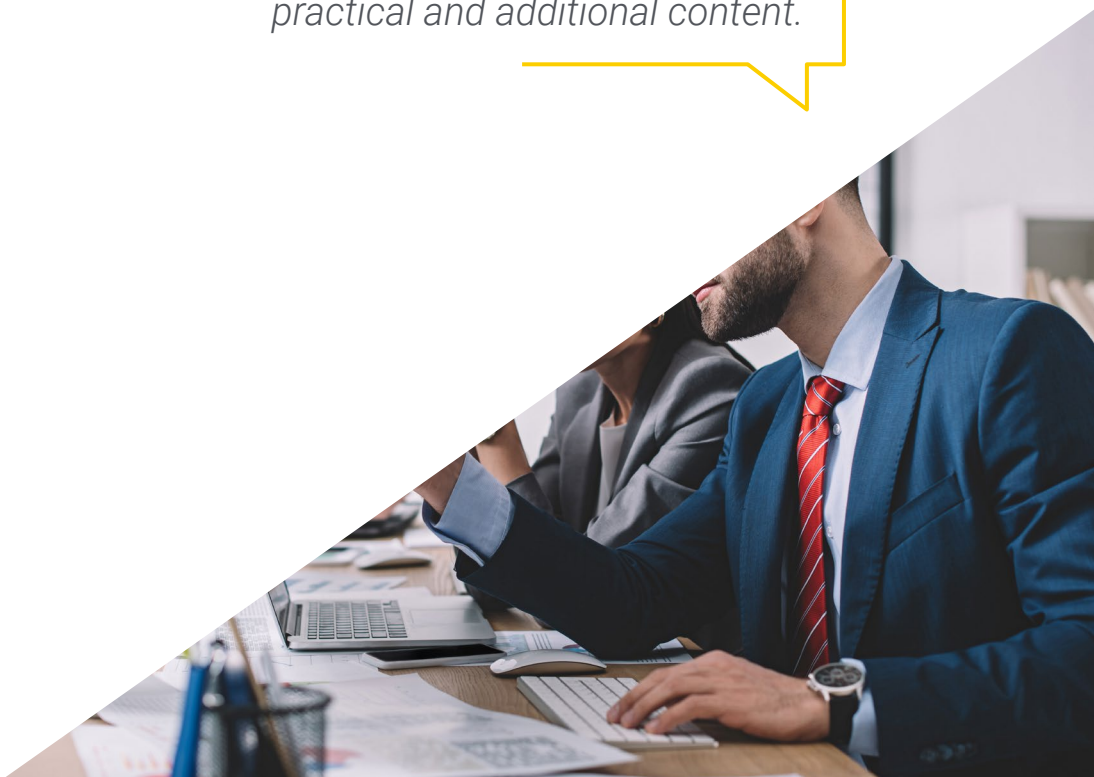
Do you fully understand the application of the properties of idempotent matrices? If you want to achieve it, enroll in this Postgraduate Diploma and you will find everything you need.

You will be able to delve into the techniques of stratified analysis in 2x2 tables, as well as the formulation of the problem in log-linear models through theoretical, practical and additional content.

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

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

This program is designed around Problem-Based Learning, whereby professionals must try to solve the different professional practice situations that arise throughout the program. To do so, they will be assisted by an innovative interactive video system created by recognized experts.



02

Objectives

Forecasting in Statistics is essential. For this reason, and given the current demand in the market for professionals who master in detail the latest techniques related to forecasting, TECH has considered it necessary to develop a program that allows graduates to catch up 100% online and through an academic experience tailored to their needs and requirements. This is how this Postgraduate Diploma was developed, with the aim of providing you with all the tools you need to achieve this in just 6 months of theoretical and practical education.

A 6-month educational experience in which you will undoubtedly achieve even your most ambitious academic and professional goals"

General Objectives

- Work on the basis of current trends in the statistical industry, focusing on the most comprehensive and innovative trend prediction methods
- Learn in detail the most sophisticated tools to carry out the application of multivariate and linear progression statistical techniques

RRR Regression, Ridge, Lasso, Elasticnet... This Postgraduate Diploma delves into each of them, so that you acquire the most specialized knowledge about their properties, as well as the advantages and disadvantages of their application"

Specific Objectives

Module 1. Linear Prediction Methods

- Introduce linear models
- Study, understand and apply simple linear regression models
- Study, understand and apply multiple linear regression models

Module 2. Multivariate Statistical Techniques

- Acquire the conceptual and practical fundamentals to conduct multivariate qualitative data analysis
- Apply specific software to solve each of these problems

Module 3. Advanced Forecasting Techniques

- Study, understand and apply specific prediction methods for one or more variables in situations where traditional methods present problems of a theoretical nature, or when the solution provided is not sufficiently satisfactory

03

Structure and Content

TECH is a reference in the online education scene for the high quality of its programs, as well as for being a pioneer in the use of innovative methodological techniques, such as the learning process based on *Relearning*, which consists of reiterating the most important concepts throughout the syllabus so that the graduate can implement them to their knowledge in a natural and progressive way, without the need to invest extra hours in memorizing. In addition, each of its programs includes diverse additional material, thanks to which you can delve in a personalized way in the different aspects of the content, attending an educational experience adapted to the demands of all professionals.

You will have access to 540 hours of theoretical, practical and additional material with which you will be able to delve into the different sections of the syllabus in a personalized way and according to your needs"

Module 1. Linear Prediction Methods

1.1. Simple Linear Regression Models
- 1.1.1. Introduction to Regression Models and Preliminary Steps in Simple Regression: Data Exploration
- 1.1.2. Models
- 1.1.3. Hypotheses
- 1.1.4. Parameters

1.2. Simple Linear Regression Estimation and Contrasts
- 1.2.1. Point Estimation of Model Parameters
  - 1.2.1.1. Least Squares Method
  - 1.2.1.2. Maximum Likelihood Estimators
- 1.2.2. Inference on Model Parameters under the Gauss-Markov Hypothesis
  - 1.2.2.1. Intervals
  - 1.2.2.2. Test
- 1.2.3. Confidence Interval for the Mean Response and Prediction Interval for New Observations
- 1.2.4. Simultaneous Inferences in Simple Regression
- 1.2.5. Confidence and Prediction Bands

1.3. Simple Linear Regression Models Diagnosis and Validation
- 1.3.1. Analysis of Variance (ANOVA) of Simple Regression Models
- 1.3.2. Model Diagnostics
  - 1.3.2.1. Graphical Assessment of Linearity and Verification of the Hypotheses by Residuals Analysis
  - 1.3.2.2. Linear Lack-of-Fit Test

1.4. Multiple Linear Regression Models
- 1.4.1. Data Exploration with Multidimensional Visualization Tools
- 1.4.2. Matrix Expression of Models and Coefficient Estimators
- 1.4.3. Interpreting Coefficients of Multiple Models

1.5. Multiple Linear Regression Estimation and Contrasts
- 1.5.1. Laws of Estimation for Coefficients, Predictions, and Residuals
- 1.5.2. Applying Properties of Idempotent Matrices
- 1.5.3. Inference in Multiple Linear Models
- 1.5.4. Anova Models

1.6. Multiple Linear Regression Models Diagnosis and Validation
- 1.6.1. "Ligatures" Test to Solve Linear Constraints on Coefficients
  - 1.6.1.1. The Principle of Incremental Variability
- 1.6.2. Waste Analysis
- 1.6.3. Box-Cox Transformation

1.7. The Problem of Multicollinearity
- 1.7.1. Detection
- 1.7.2. Solutions

1.8. Polynomial Regression
- 1.8.1. Definition and Example
- 1.8.2. Matrix Form and Calculating Estimates
- 1.8.3. Interpretation
- 1.8.4. Alternative Approaches

1.9. Regression with Qualitative Variables
- 1.9.1. Dummy Variables in Regression
- 1.9.2. Interpreting Coefficients
- 1.9.3. Applications

1.10. Criteria for Models Selection
- 1.10.1. Mallows Cp Statistics
- 1.10.2. Model Cross Validation
- 1.10.3. Automatic Stepwise Selection

Module 2. Multivariate Statistical Techniques

2.1. Introduction

2.2. Nominal Scale
- 2.2.1. Measures of Association for 2x2 Tables
  - 2.2.1.1. Phi Coefficient
  - 2.2.1.2. Relative Risk
  - 2.2.1.3. Cross-Product Ratio (Odds Ratio)
- 2.2.2. Measures of Association for IxJ Tables
  - 2.2.2.1. Contingency Ratio
  - 2.2.2.2. Cramer's V
  - 2.2.2.3. Lambdas

2.2.2.4. Tau of Goodman and Kruskal
2.2.2.5. Uncertainty Coefficient
2.2.3. Kappa Coefficient
2.3. Ordinal Scale
2.3.1. Gamma Coefficients
2.3.2. Kendall's Tau-B and Tau-C
2.3.3. Sommers' D
2.4. Interval or Ratio Scale
2.4.1. Eta Coefficient
2.4.2. Pearson's and Spearman's Correlation Coefficients
2.5. Stratified Analysis in 2x2 Tables
2.5.1. Stratified Analysis
2.5.2. Stratified Analysis in 2x2 Tables
2.6. Problem Formulation in Log-linear Models
2.6.1. The Saturated Model for Two Variables
2.6.2. The General Saturated Model
2.6.3. Other Types of Models
2.7. The Saturated Model
2.7.1. Calculation of Effects
2.7.2. Goodness of Fit
2.7.3. Test of K effects
2.7.4. Partial Association Test
2.8. The Hierarchical Model
2.8.1. The Backward Method
2.9. Probit Response Models
2.9.1. Problem Formulation
2.9.2. Parameter Estimation
2.9.3. Chi-Square Goodness-of-Fit Test
2.9.4. Parallelism Test for Groups
2.9.5. Estimation of the Dose Required to Obtain a Given Response Ratio
2.10. Binary Logistic Regression
2.10.1. Problem Formulation
2.10.2. Qualitative Variables in Logistic Regression
2.10.3. Selection of Variables
2.10.4. Parameter Estimation
2.10.5. Goodness of Fit
2.10.6. Classification of Individuals
2.10.7. Prediction

Module 3. Advanced Forecasting Techniques

3.1. General Linear Regression Model
3.1.1. Definition
3.1.2. Properties
3.1.3. Examples
3.2. Partial Least Squares Regression
3.2.1. Definition
3.2.2. Properties
3.2.3. Examples
3.3. Principal Component Regression
3.3.1. Definition
3.3.2. Properties
3.3.3. Examples

3.4. RRR Regression
- 3.4.1. Definition
- 3.4.2. Properties
- 3.4.3. Examples

3.5. Ridge Regression
- 3.5.1. Definition
- 3.5.2. Properties
- 3.5.3. Examples

3.6. Lasso Regression
- 3.6.1. Definition
- 3.6.2. Properties
- 3.6.3. Examples

3.7. Elasticnet Regression
- 3.7.1. Definition
- 3.7.2. Properties
- 3.7.3. Examples

3.8. Non-Linear Prediction Models
- 3.8.1. Non-Linear Regression Models
- 3.8.2. Non-Linear Least Squares
- 3.8.3. Conversion to a Linear Model

3.9. Parameter Estimation in a Non-Linear System
- 3.9.1. Linearization
- 3.9.2. Other Parameter Estimation Methods
- 3.9.3. Initial Values
- 3.9.4. Computer Programs

3.10. Statistical Inference in Non-Linear Regression
- 3.10.1. Statistical Inference in Non-Linear Regression
- 3.10.2. Approximate Inference Validation
- 3.10.3. Examples

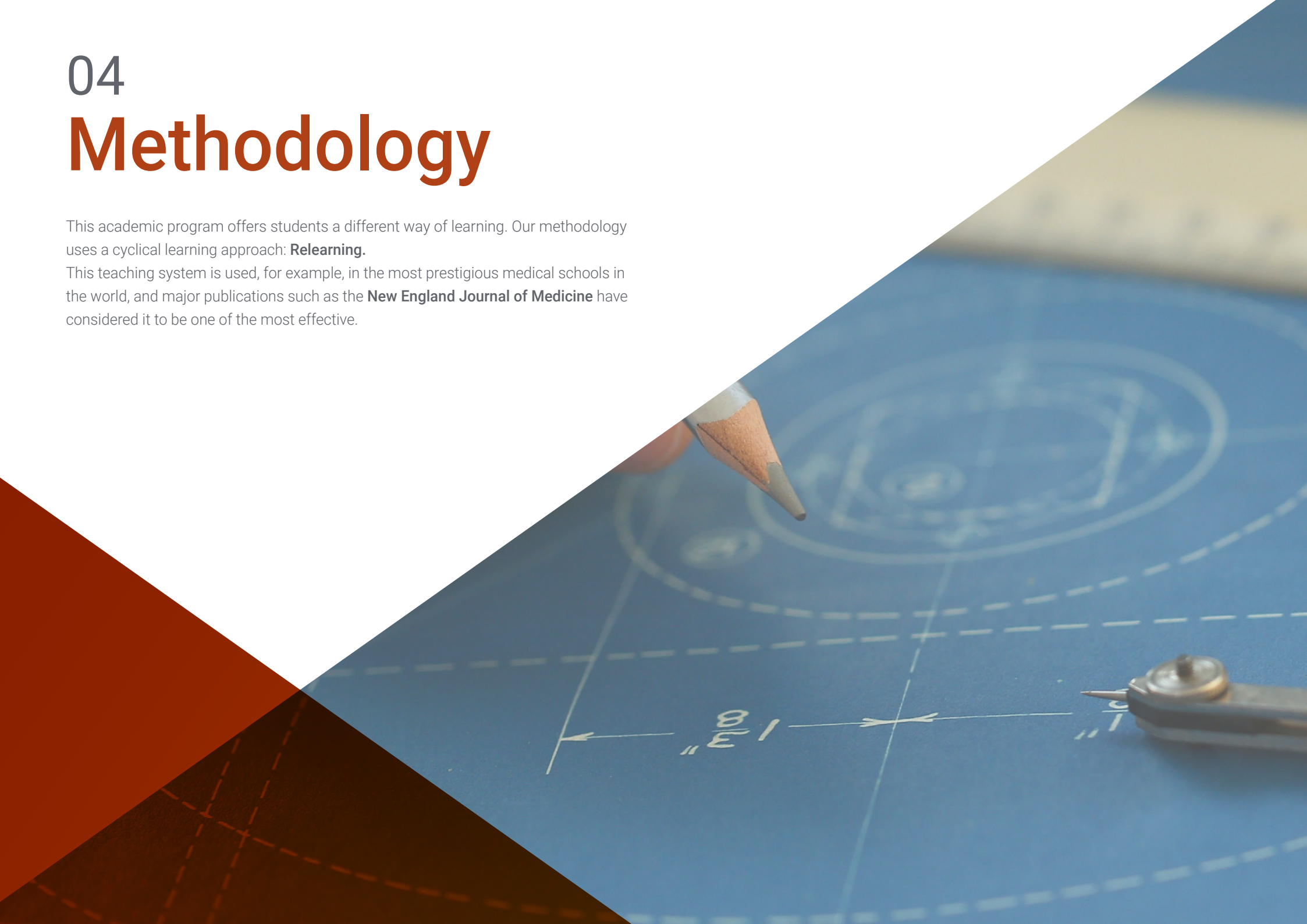
You will have theoretical and practical examples of each module, so that you can conceptualize both the information and the forecasting techniques and strategies that you will find in this Postgraduate Diploma”

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

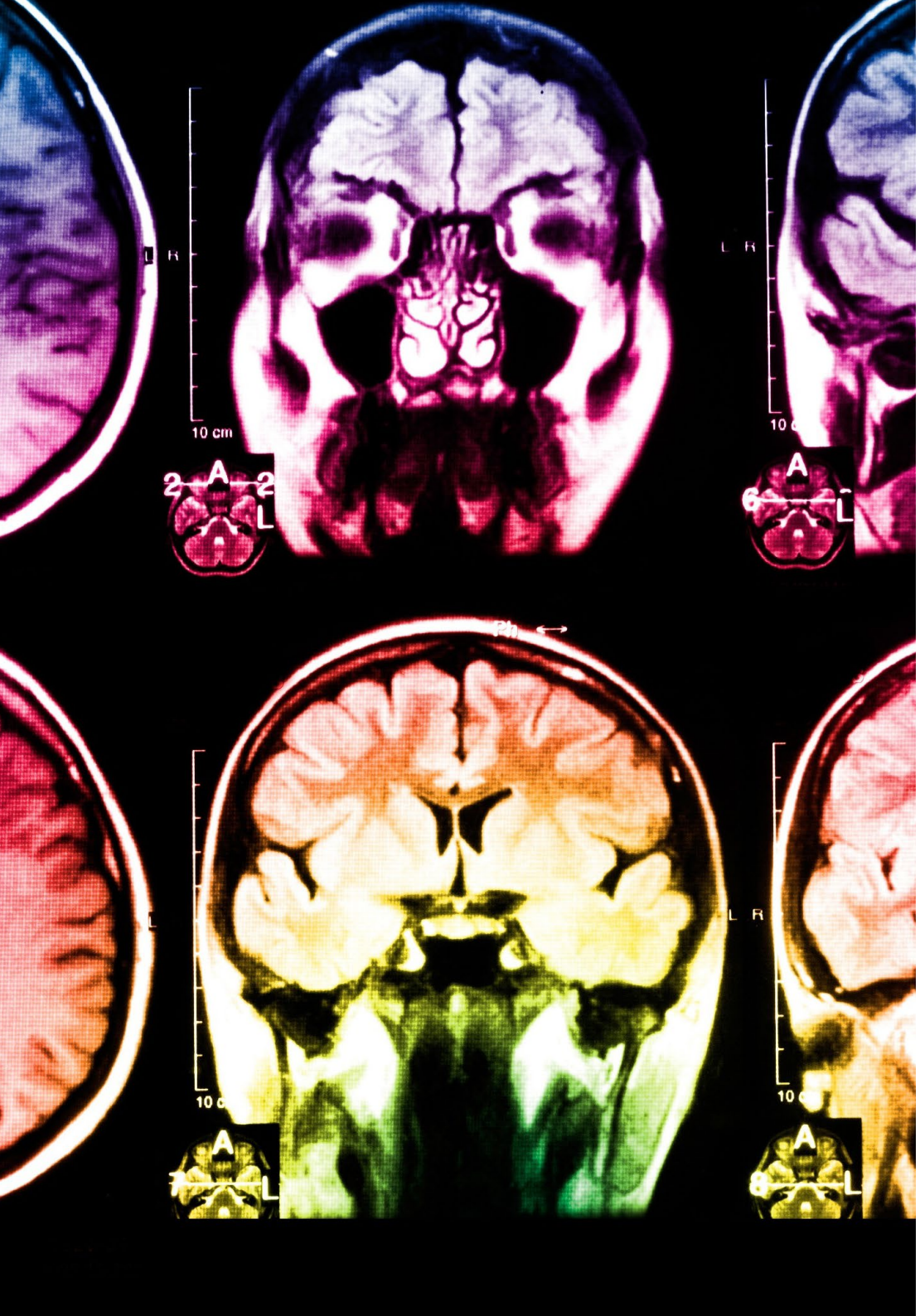
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

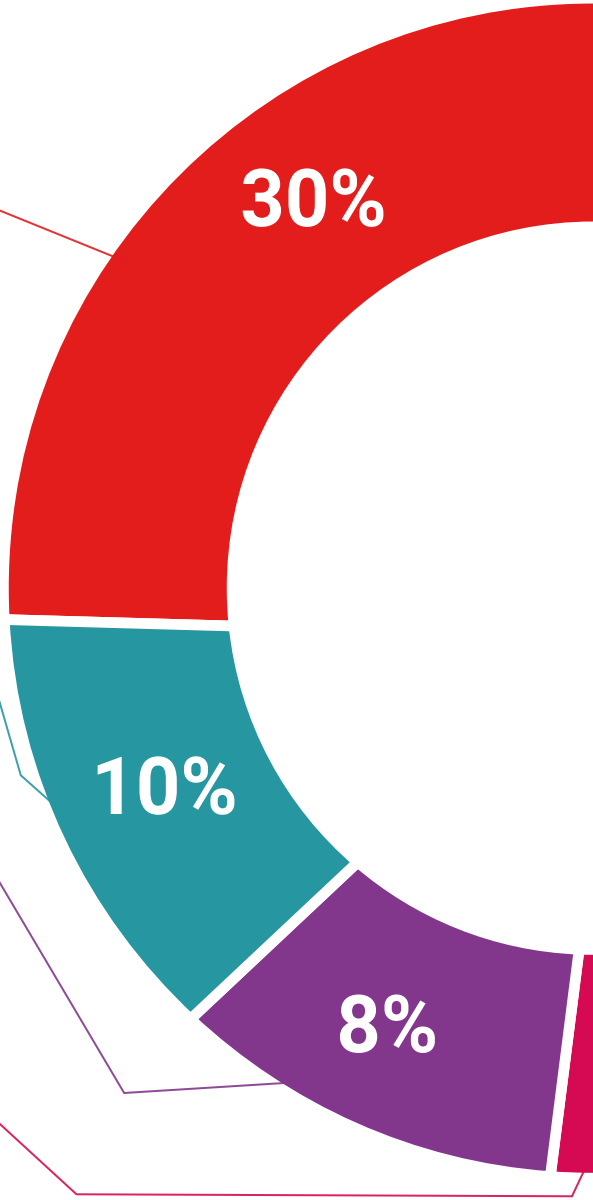
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

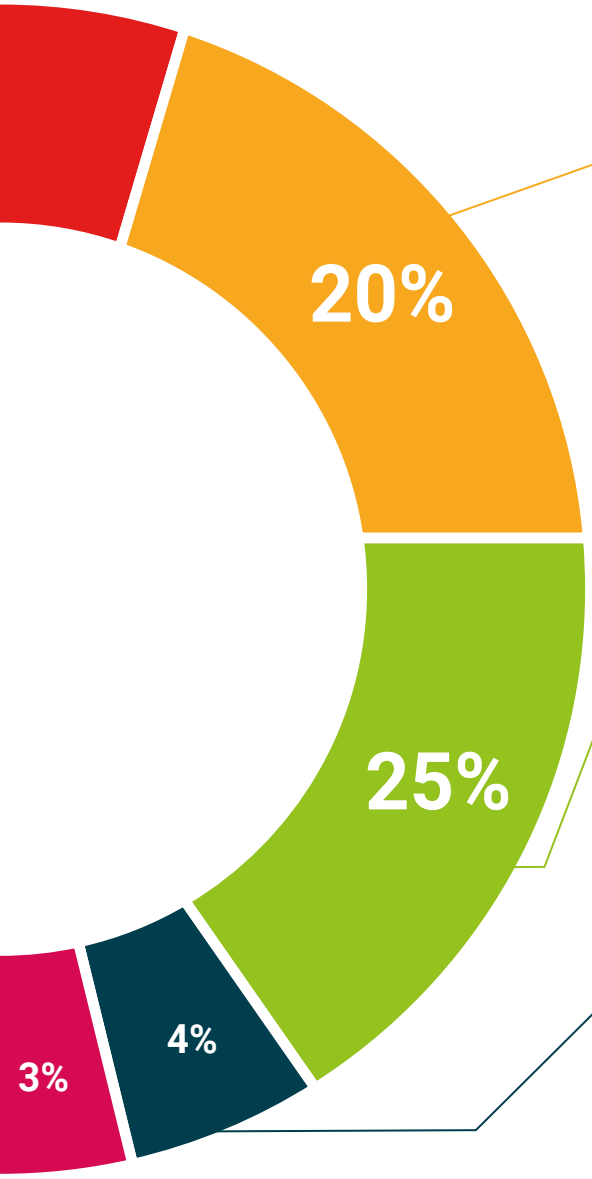
Practising Skills and Abilities

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 Forecasting guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

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

This private qualification will allow you to obtain a **Postgraduate Diploma in Forecasting** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ***(official bulletin)***. Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

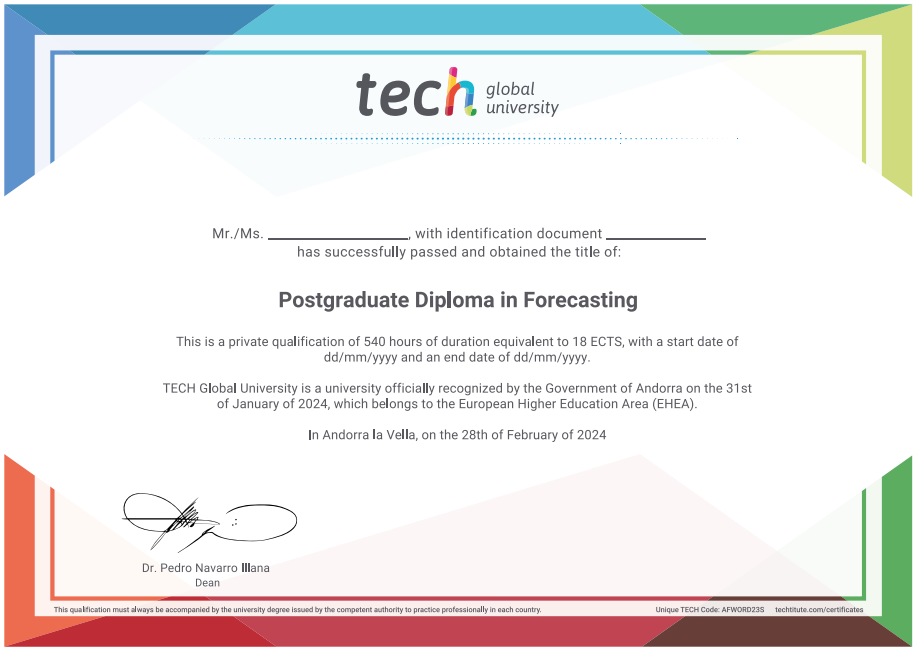
This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Professional Master's Degree in Nombre del Programa**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Diploma in Forecasting

This is a private qualification of 540 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
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

In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

tech global university

Postgraduate Diploma

Forecasting

- Modality: **Online**
- Duration: **6 months.**
- Certificate: **TECH Global University**
- Accreditation: **18 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Postgraduate Diploma
Forecasting