Postgraduate Certificate

Prediction

tech global university

Postgraduate Certificate

Prediction

- Modality: **online**
- Duration: **12 weeks**
- Certificate: **TECH Global University**
- Credits: **12 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/prediction**

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01

Introduction

The ability to predict results and trends is increasingly important for companies in a competitive marketplace. In fact, more and more companies are using predictive analytics to improve their efficiency and competitiveness. Therefore, more and more highly qualified engineers are demonstrating their in-depth knowledge of linear regression models. For this reason, TECH has created an online program that offers state-of-the-art knowledge in simple linear regression estimation and contrasts, as well as confidence and prediction bands. And to facilitate the elite and contemporary education of graduates, the program is fully online. It also includes multimedia teaching resources and case studies provided by experts in the field.

Thanks to this Postgraduate Certificate you will be able to contribute to your professional career and increase the competitiveness of your company"

Prediction has become a fundamental tool for decision making in various fields, from industry to medicine. Information and communication technologies have allowed an exponential growth in the amount of data generated, which has led to the need for increasingly accurate and efficient forecasting methods. Therefore, it is expected that the global market for data analysis and prediction software will continue to grow, which will generate a greater demand for this discipline.

Given this reality, it is essential for professionals to have solid knowledge in prediction to be able to apply it in their field of work. This is where the university program that TECH has created responds to the current needs of engineers. In this way, it provides cutting-edge and complete education in prediction techniques, covering relevant topics such as the diagnosis and validation of the multiple linear regression model.

One of the great advantages of this program is that it is developed in a 100% online format, which allows students to access the contents from anywhere in the world, without geographical or time restrictions. In addition, the Relearning methodology is used, which is based on learning by solving real problems, making the learning process more dynamic and effective.

This **Postgraduate Certificate in Prediction** 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 eminently practical contents with which it is conceived provide sporting 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

Enroll in a university qualification in the applications of the properties of idempotent matrices"

You will only need a device with an Internet connection to access the most comprehensive academic program in the current academic panorama"

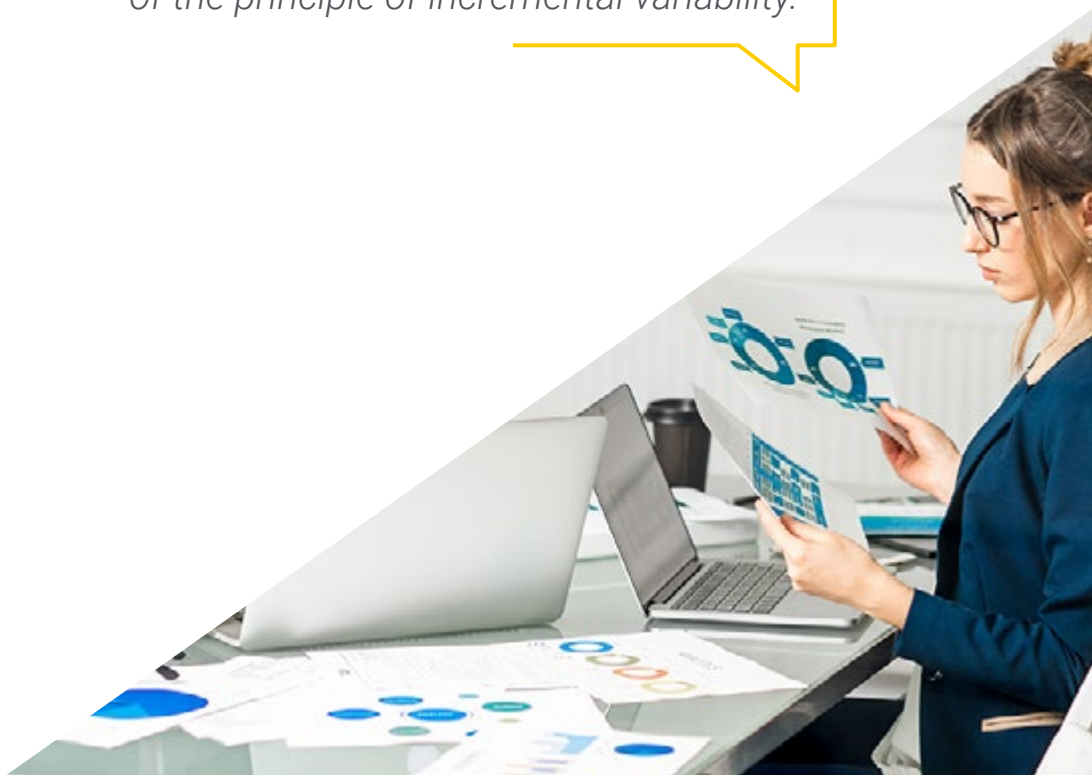
Choose your schedule, pace of study and location. TECH provides the resources and gives you access to them 24 hours a day.

A 100% online qualification that will provide you with the most comprehensive knowledge of the principle of incremental variability.

The program's teaching staff includes professionals from 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.

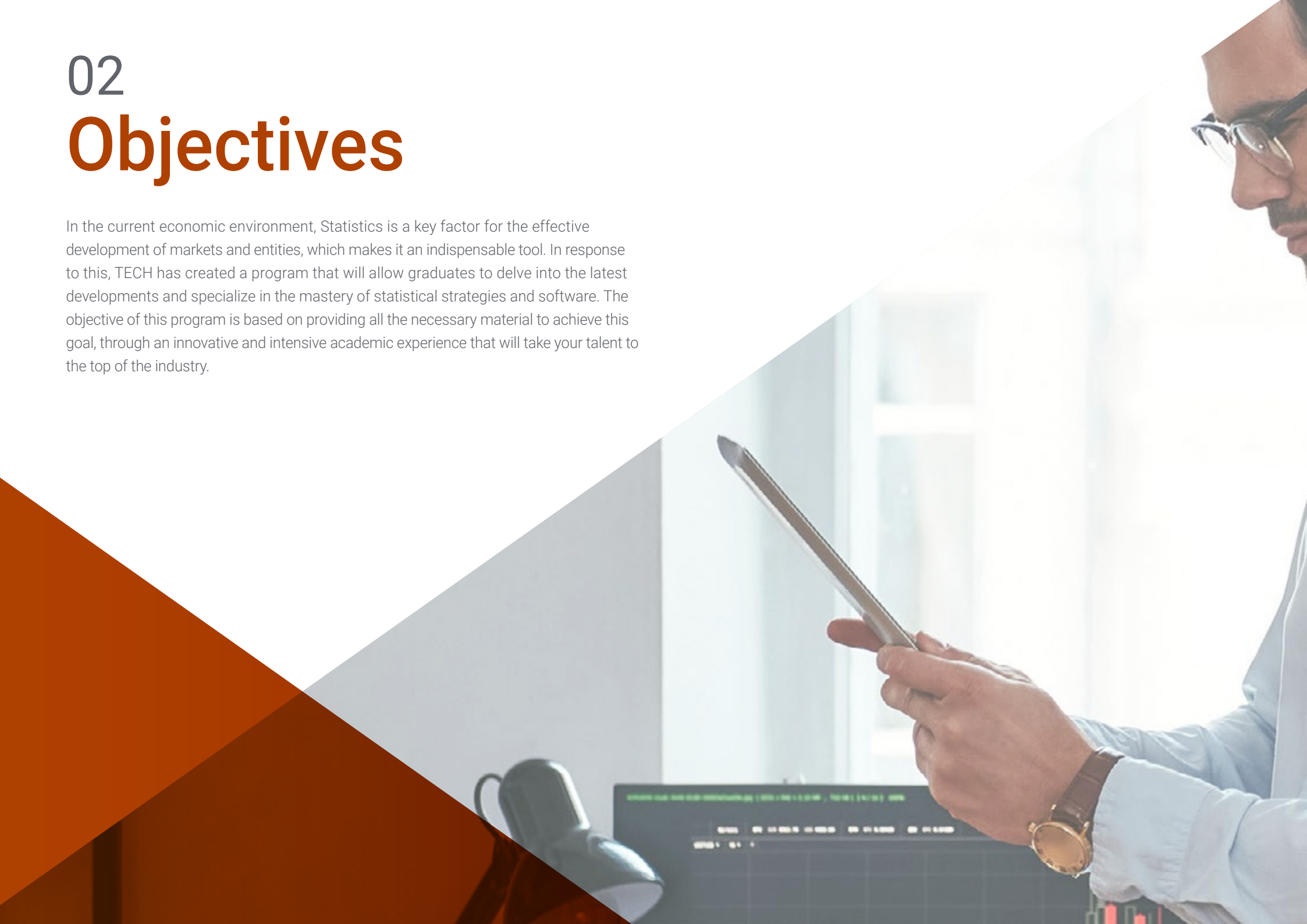
This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Objectives

In the current economic environment, Statistics is a key factor for the effective development of markets and entities, which makes it an indispensable tool. In response to this, TECH has created a program that will allow graduates to delve into the latest developments and specialize in the mastery of statistical strategies and software. The objective of this program is based on providing all the necessary material to achieve this goal, through an innovative and intensive academic experience that will take your talent to the top of the industry.



Take a firm step in your professional career and reach your professional goals with this Postgraduate Certificate in Prediction"

General Objectives

- Provide the graduate with the latest and most exhaustive information on Computational Statistics, which will help them to specialize in this field reaching the highest level of knowledge
- Provide them with everything necessary to acquire a professional mastery of the main tools in this field through the resolution of use cases based on real and frequent situations in the industry

Your goals are TECH's goals. Become the professional you've always wanted and specialize in advanced prediction techniques"

Specific Objectives

- Introduce students to linear models
- Study, understand and apply the Simple Linear Regression model
- Study, understand and apply the Multiple Linear Regression model
- 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

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Structure and Content

A team of experts in the field of Engineering, specifically in Applied Statistics, has been in charge of designing the syllabus for this program. As a result, TECH has created a complete and rigorous program that covers all the information needed to master this discipline within 12 weeks. In addition to the full syllabus, hours of additional varied materials have been included so that graduates can work in a personalized manner according to their level of demand. All of this is presented in a 100% online format that is convenient and flexible and is compatible with any device that has an Internet connection.

A syllabus covering Ridge, Lasso and Elasticnet regression with which you will delve into predictive models for effective statistical inference"

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. Advanced Prediction Techniques

2.1. General Linear Regression Model
- 2.1.1. Definition
- 2.1.2. Properties
- 2.1.3. Examples

2.2. Partial Least Squares Regression
- 2.2.1. Definition
- 2.2.2. Properties
- 2.2.3. Examples

2.3. Principal Component Regression
- 2.3.1. Definition
- 2.3.2. Properties
- 2.3.3. Examples

2.4. RRR Regression
- 2.4.1. Definition
- 2.4.2. Properties
- 2.4.3. Examples

2.5. Ridge Regression
- 2.5.1. Definition
- 2.5.2. Properties
- 2.5.3. Examples

2.6. Lasso Regression
- 2.6.1. Definition
- 2.6.2. Properties
- 2.6.3. Examples

2.7. Elasticnet Regression
- 2.7.1. Definition
- 2.7.2. Properties
- 2.7.3. Examples

2.8. Non-Linear Prediction Models
- 2.8.1. Non-Linear Regression Models
- 2.8.2. Non-Linear Least Squares
- 2.8.3. Conversion to a Linear Model

2.9. Parameter Estimation in a Non-Linear System
- 2.9.1. Linearization
- 2.9.2. Other Parameter Estimation Methods
- 2.9.3. Initial Values
- 2.9.4. Computer Programs

2.10. Statistical Inference in Non-Linear Regression
- 2.10.1. Statistical Inference in Non-Linear La Regression
- 2.10.2. Approximate Inference Validation
- 2.10.3. Examples

Progress through the syllabus of this program in a much more agile way thanks to the Relearning method used by TECH"

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

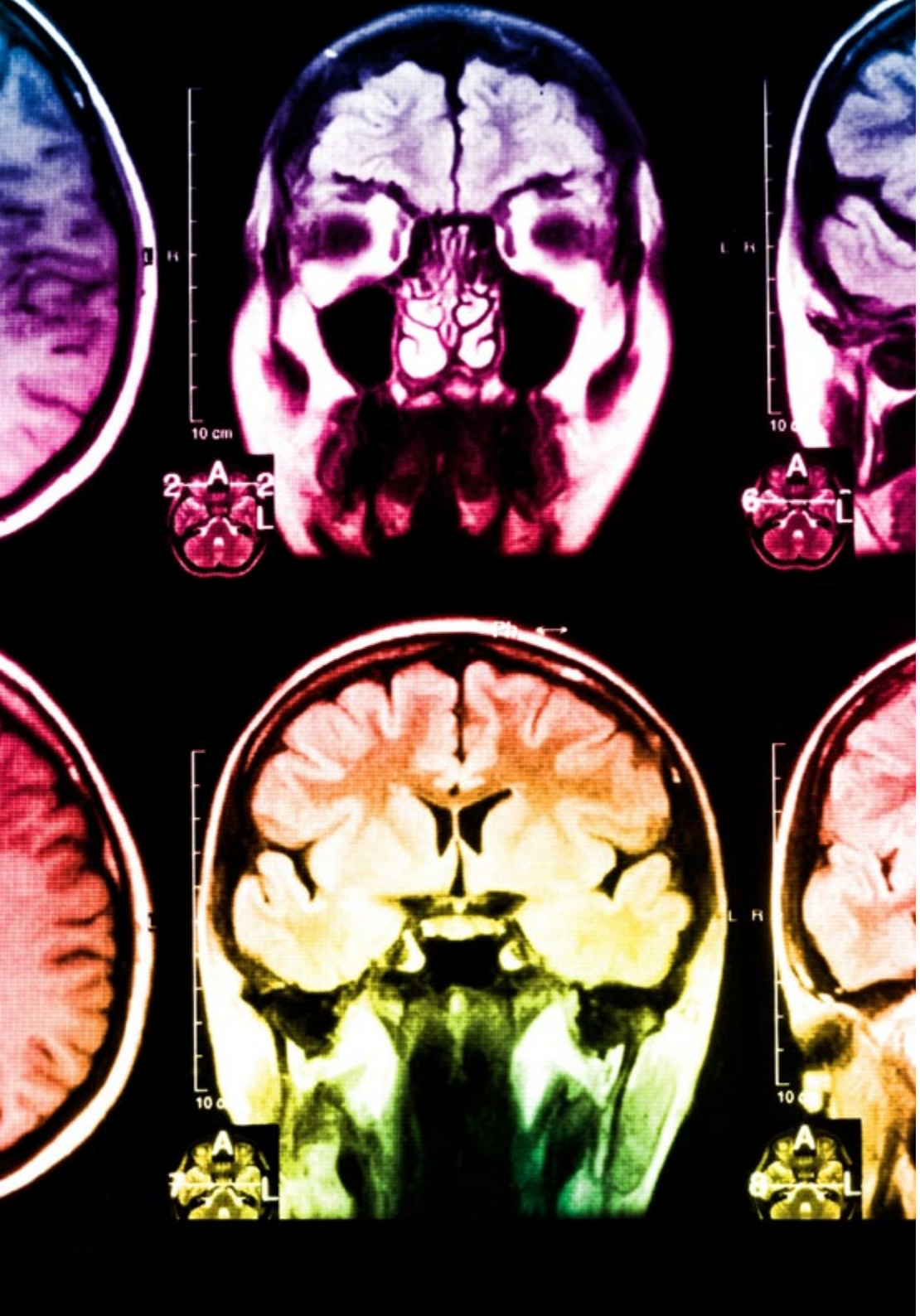
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

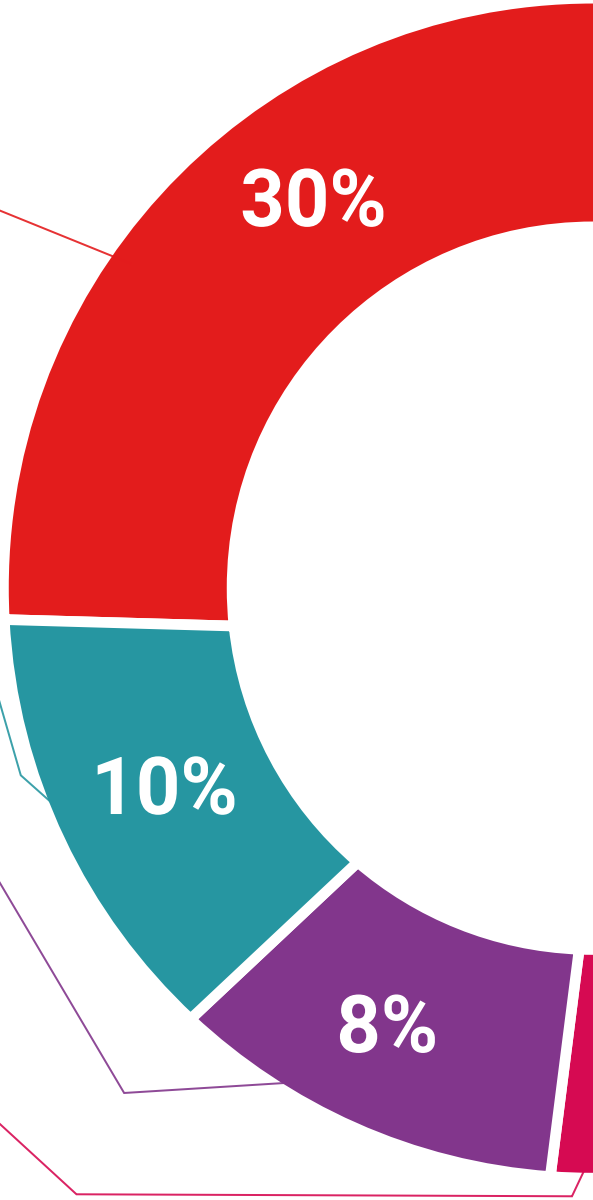
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

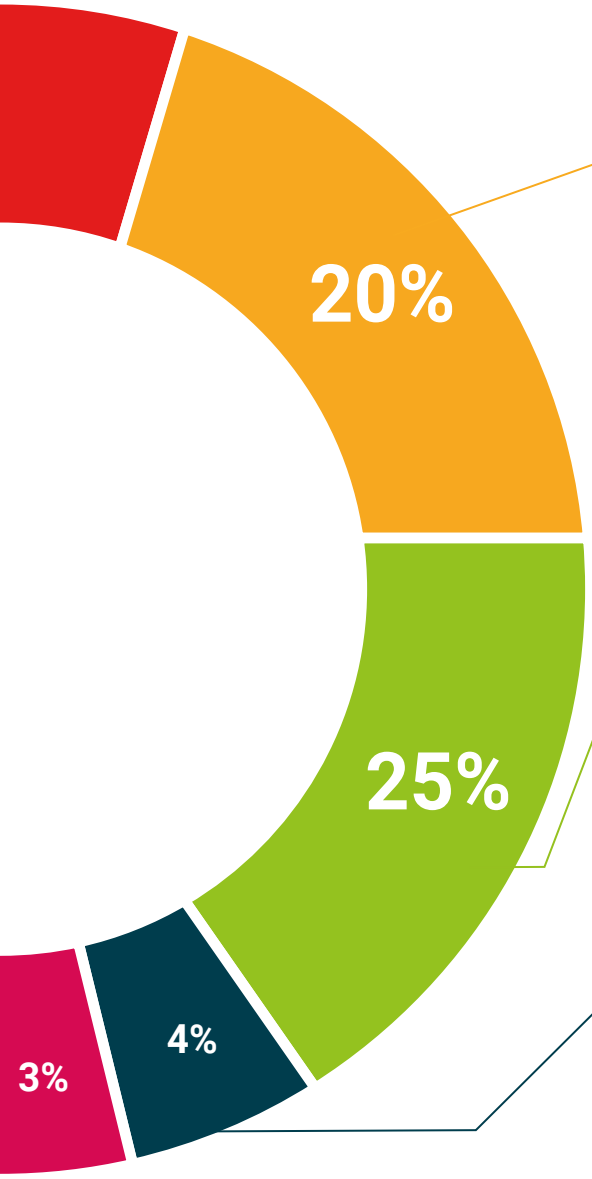
Practising Skills and Abilities

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

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

This program will allow you to obtain your **Postgraduate Certificate in Prediction** 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** title 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: **Postgraduate Certificate in Prediction**

Modality: **online**

Duration: **12 weeks**

Accreditation: **12 ECTS**


tech global university

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

Postgraduate Certificate in Prediction

This is a program of 360 hours of duration equivalent to 12 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
Rector

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 Global University will make the necessary arrangements to obtain it, at an additional cost.

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