

Postgraduate Certificate

Data Science and Machine Learning



Postgraduate Certificate Data Science and Machine Learning

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtitude.com/us/information-technology/postgraduate-certificate/data-science-machine-learning

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01

Introduction to the Program

Data Science and Machine Learning have become essential tools for decision-making in multiple sectors, from industry to scientific research. The United Nations highlights that Artificial Intelligence and Data Analysis are redefining the way knowledge is generated and processes are optimized, driving innovation and global competitiveness. Given this scenario, there is a growing demand for professionals with advanced skills in data modeling, algorithms, and machine learning. In this regard, TECH offers a 100% online program designed to provide up-to-date and specialized education tailored to market demands and technological developments.



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Thanks to this completely online program, you will build innovative machine learning models applying validation criteria”

Data Science and Machine Learning have revolutionized the way organizations process information and make strategic decisions. In sectors such as Healthcare, Finance, and the Technology Industry, specialists in these areas play a key role in optimizing processes, developing predictive models, and automating complex tasks.

The Postgraduate Certificate in Data Science and Machine Learning provides the tools you need to excel in this field. Through a practical approach, it allows you to understand everything from Data Mining to the construction of advanced artificial intelligence models. Mastering these skills opens up opportunities in roles such as Data Analyst, Machine Learning Engineer, or Data Scientist, which are highly sought after in technology companies, financial institutions, and research centers. In addition, the knowledge acquired facilitates entry into emerging areas such as process automation, advanced business analytics, and applied Artificial Intelligence.

The 100% online format of this university program allows access to up-to-date content without geographical or time restrictions, making it easy to balance learning with other responsibilities. The virtual platform offers interactive materials, master classes, and specialized resources that guarantee a dynamic study experience tailored to the needs of the sector. In addition, the flexibility of the program allows students to advance at their own pace, ensuring in-depth learning that can be applied in different professional fields.

This **Postgraduate Certificate in Data Science and Machine Learning** 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 Technology and Software
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Special emphasis on innovative methodologies in Software Development
- ♦ 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



Enhance data visualization to improve analysis and present information clearly with Matplotlib”

“

You will delve into advanced data cleaning and transformation techniques to optimize processing through automated pipelines”

You will apply descriptive statistics to interpret large volumes of data and analyze trends.

You will develop supervised Machine Learning models and optimize their performance with regression and classification algorithms.

The teaching staff includes professionals from the field of technology, who bring their work experience to this program, as well as renowned specialists from leading companies 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 an immersive learning experience designed to prepare for real-life situations.

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



02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it relies on an enormous faculty of more than 6,000 professors of the highest international renown.



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*Study at the world's largest online university
and guarantee your professional success.
The future starts at TECH”*

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.



The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.



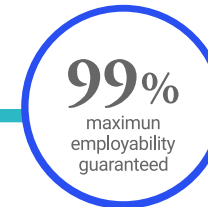
Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.



The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.



03 Syllabus

Technological advances and digitalization have transformed multiple sectors, generating a growing demand for specialists with advanced knowledge and strategic vision. The syllabus will delve into the use of cutting-edge tools for data processing, as well as advanced data visualization techniques and even graph creation. In this way, students will acquire advanced skills to analyze data, build predictive models, and apply Machine Learning techniques in real-world contexts.




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*You will delve into model
performance assessment and
data-driven decision-making”*

Module 1. Data Science and Machine Learning for Seniors

- 1.1. Data Science
 - 1.1.1. Practical Applications in Data Management and IT Process Optimization
 - 1.1.2. Main Tools for Data Analysis and Processing: Pandas, NumPy
 - 1.1.3. Initial Data Processing
- 1.2. Data Visualization for Analysis and Effective Information Presentation
 - 1.2.1. Creating Basic Graphs with Matplotlib
 - 1.2.2. Advanced Visualizations with Seaborn
 - 1.2.3. Customization and Design of Interactive Graphs
- 1.3. Descriptive Statistics in Data Science
 - 1.3.1. Measures of Central Tendency
 - 1.3.2. Measures of Dispersion and Distribution
 - 1.3.3. Correlation Analysis
- 1.4. Data Cleaning and Transformation
 - 1.4.1. Handling Null and Duplicate Values
 - 1.4.2. Mathematical Transformations and Categorization
 - 1.4.3. Use of Pipelines for Automated Cleaning
- 1.5. Supervised Machine Learning
 - 1.5.1. Linear and Logistic Regression Models
 - 1.5.2. Classification Models: KNN, Decision Trees
 - 1.5.3. Model Assessments with Performance Metrics
- 1.6. Unsupervised Machine Learning
 - 1.6.1. Clustering with K-means and DBSCAN
 - 1.6.2. Dimension Reduction with PCA
 - 1.6.3. Group and Pattern Analysis in Data
- 1.7. Neural Networks
 - 1.7.1. Types of Neural Networks and Their Architecture
 - 1.7.2. Implementation with Keras and TensorFlow
 - 1.7.3. Practical Examples of Prediction



- 
- 1.8. Real-Time Data Processing
 - 1.8.1. Integration with Apache Kafka
 - 1.8.2. Data Streaming with Spark
 - 1.8.3. Practical Examples of Real-Time Processing
 - 1.9. Implementation of Data Science Projects
 - 1.9.1. End-to-end Project Design
 - 1.9.2. Integrating Models into Applications
 - 1.9.3. Testing and Deployment in Production
 - 1.10. Ethics and Responsibility in Data Use
 - 1.10.1. Ethical Considerations in Machine Learning
 - 1.10.2. Biases in Data and Models
 - 1.10.3. Regulations and Legal Compliance

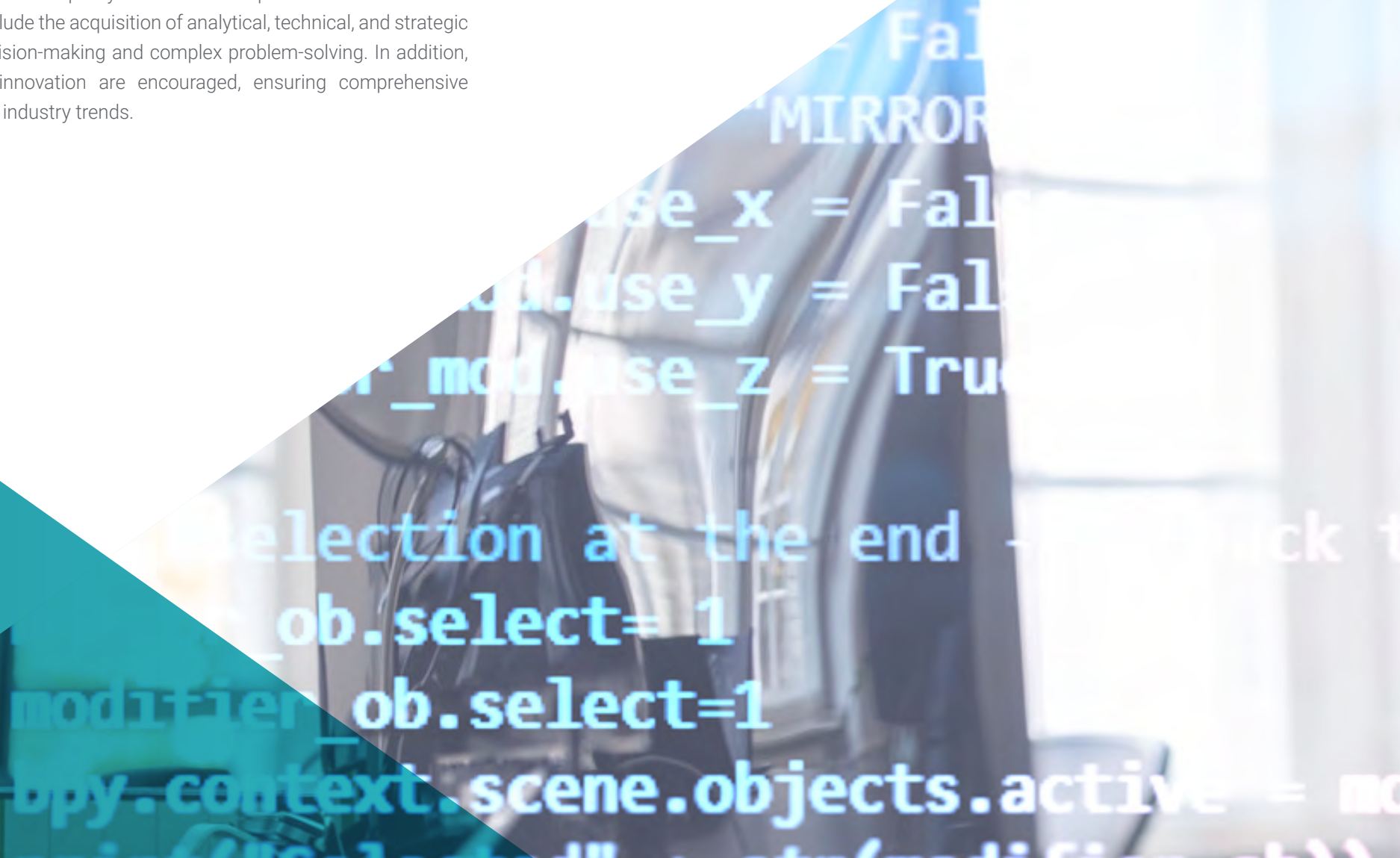
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You will master the use of classification, regression, and dimensionality reduction algorithms”

04

Teaching Objectives

This university program aims to provide solid, applied knowledge, combining theory and practice to develop key skills in a competitive environment. Its teaching objectives include the acquisition of analytical, technical, and strategic skills essential for decision-making and complex problem-solving. In addition, critical thinking and innovation are encouraged, ensuring comprehensive preparation in line with industry trends.



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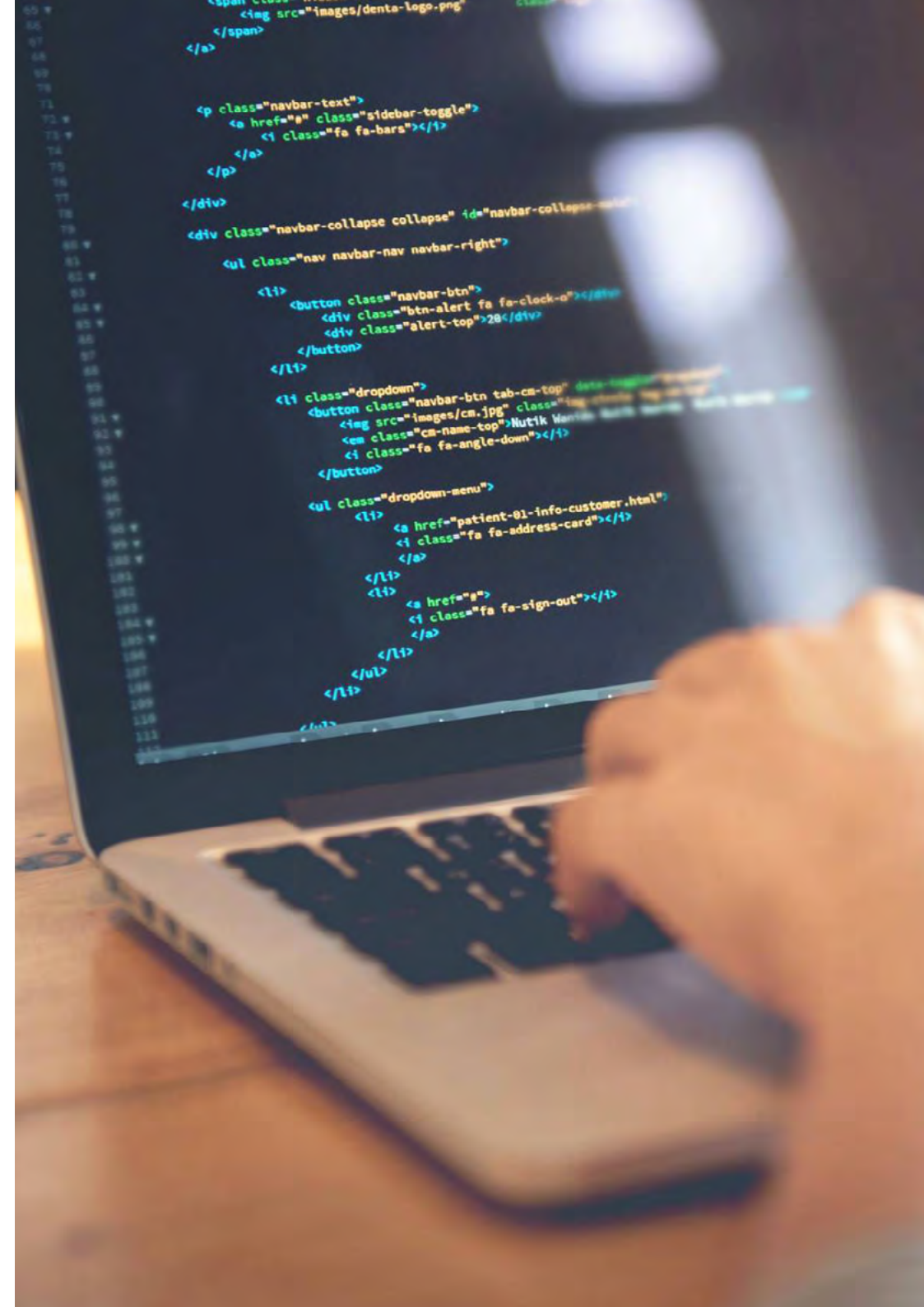
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*Build neural networks from scratch
and implement complex predictive
models with TensorFlow and Keras”*



General Objectives

- ♦ Provide in-depth knowledge of advanced software architectures and their applicability in professional environments
- ♦ Provide a comprehensive overview of modern back-end development, covering architectures, tools, and best practices
- ♦ Develop efficient and scalable front-end applications with modern technologies
- ♦ Apply advanced data science and machine learning techniques
- ♦ Understand the fundamentals of cybersecurity and its importance in software development
- ♦ Master the fundamental principles of DevOps and its impact on software development
- ♦ Implement the principles of the agile manifesto in development environments
- ♦ Manage the differences and benefits of native and cross-platform mobile development
- ♦ Analyze the fundamental concepts of cloud computing and its impact on application development and operation





Specific Objectives

- ♦ Apply data cleaning, transformation, and preparation methods for Machine Learning
- ♦ Develop advanced visualizations with Matplotlib and Seaborn to interpret data
- ♦ Train supervised Machine Learning models and evaluate their performance with key metrics
- ♦ Implement clustering and dimensionality reduction techniques in unsupervised Machine Learning



The specialized readings will allow you to further extend the rigorous information provided in this academic option"

05 Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”

The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

“

*At TECH you will NOT have live classes
(which you might not be able to attend)”*



The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

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TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want”

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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.



A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.



As such, the best educational materials, thoroughly prepared, will be available in this program:



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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



Interactive Summaries

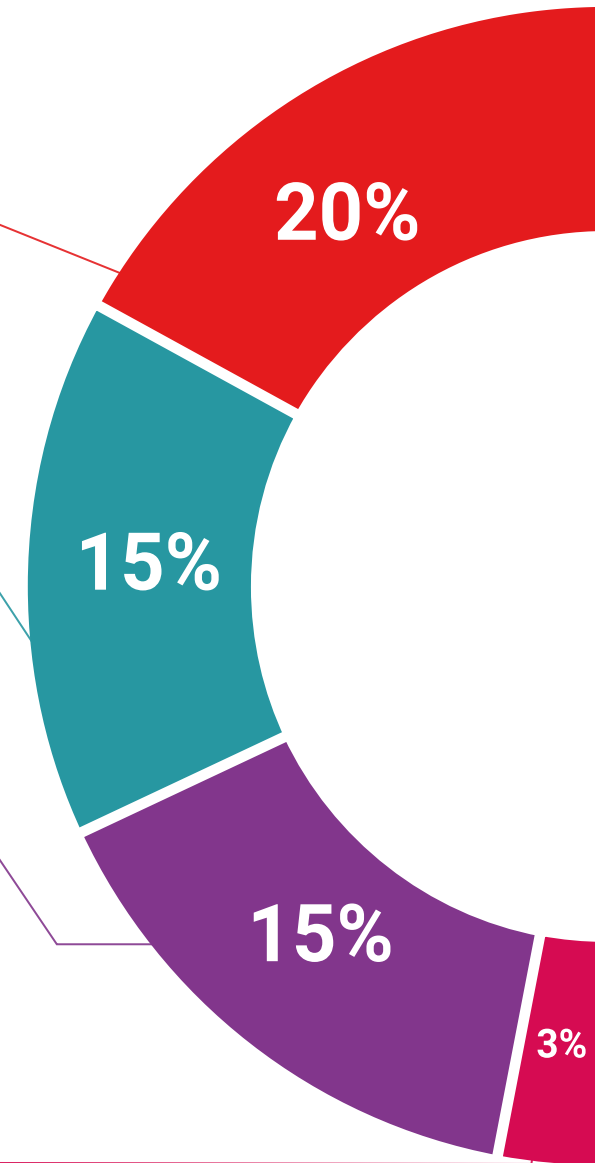
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

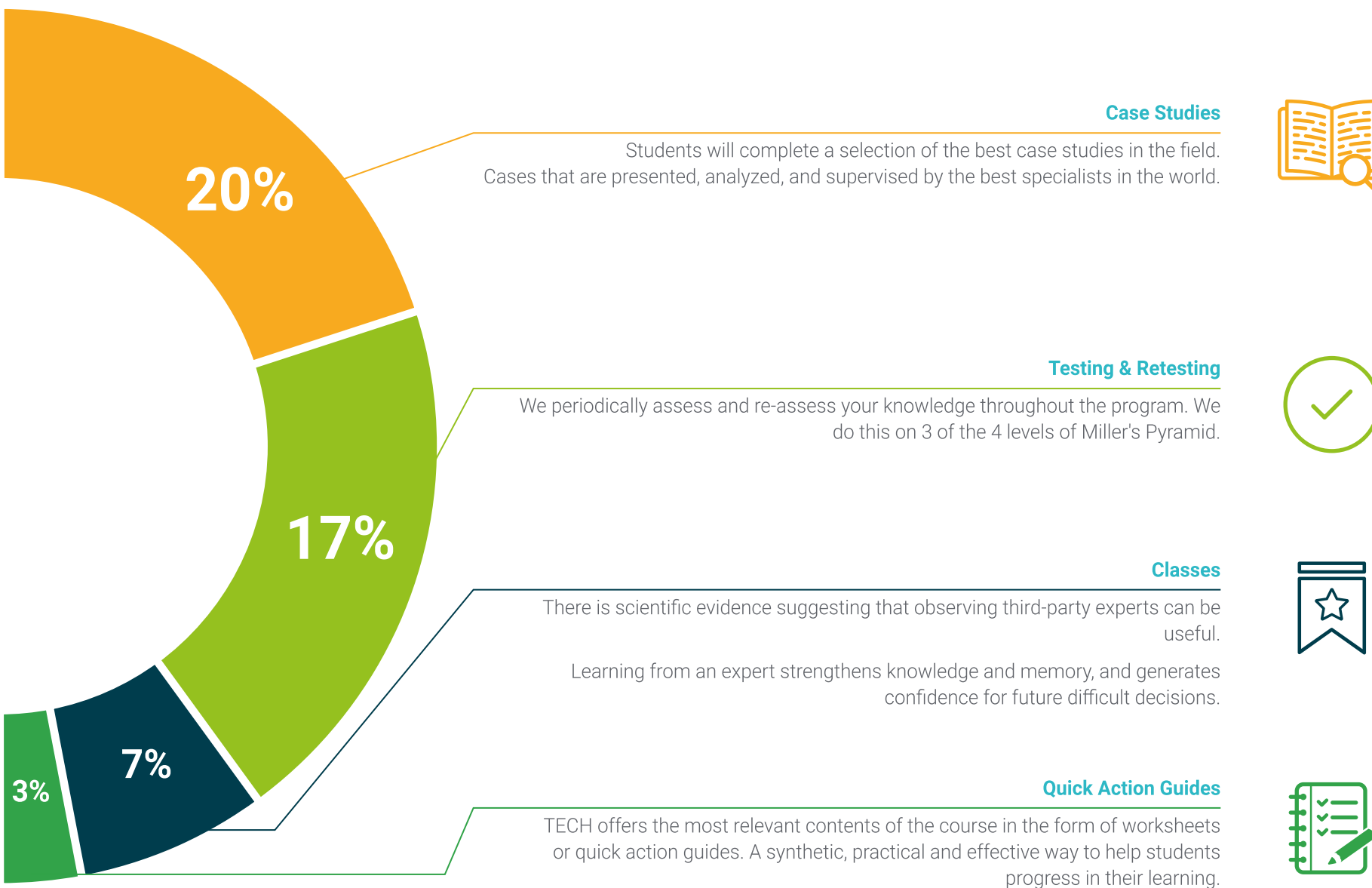
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





06

Teaching Staff

The teaching staff for this program is made up of specialists with outstanding professional careers in Data Science and Machine Learning. Thanks to their experience, each teacher brings a practical and up-to-date perspective, combining theory with real-world applications. In addition, the diversity of profiles within the academic team allows for a multidisciplinary approach, covering the latest trends and methodologies. This combination of knowledge and experience ensures quality teaching, focused on excellence and preparing professionals capable of facing market challenges with confidence.



“

Learn from a faculty made up of industry experts with extensive experience in Data Science and Machine Learning”

Management



Mr. Utrilla Utrilla, Rubén

- Technology Project Manager at Serquo
- Fullstack Developer at ESSP
- Junior Fullstack Developer at Sinis Technology S.L
- Junior Fullstack Developer at Cantoblanco Polytechnic School Campus
- Master's Degree in AI and Innovation by Founderz
- Degree in Computer Engineering from the Autonomous University of Madrid
- Google Cloud Developer course in Google Academic Program



Professors

Mr. González Ávila, José Luis

- ♦ Head of Digital Transformation Project for Public Services in the Canary Islands Government
- ♦ Forensic Expert in Information Technology at Juan Antonio Rodríguez
- ♦ Project Manager at Aguas y Estructuras S.A.
- ♦ Senior Technology Consultant at Plexus Tecnologías
- ♦ Analyst at Novasoft Soluciones Canarias S.A
- ♦ Bachelor's Degree in Computer Engineering from the University of La Laguna
- ♦ Technical Degree in Management Computer Engineering from the University of La Laguna
- ♦ Expert in Big Data in Public Administration (R.FD.14.IN.24) from the Canary Islands Institute of Public Administration
- ♦ Expert in European Project Management (R.FD.62.AB.24) from the Canary Islands Institute of Public Administration
- ♦ Specialist in Power BI Data Visualization Tool for Decision Making by Structuralia
- ♦ Expert in Scrum Manager – eLearning by Scrum Master
- ♦ Expert in Management and Marketing of Innovative Products by Human Development Human Resources and Training Consulting
- ♦ Expert in the Use of the AVIP Tool for Teachers-Tutors by INTECCA

“

A unique, crucial and decisive learning experience to boost your professional development”

07 Certificate

This Postgraduate Certificate in Data Science and Machine Learning guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Postgraduate Certificate issued by TECH Global University.



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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 diploma for the **Postgraduate Certificate in Data Science and Machine Learning** 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.

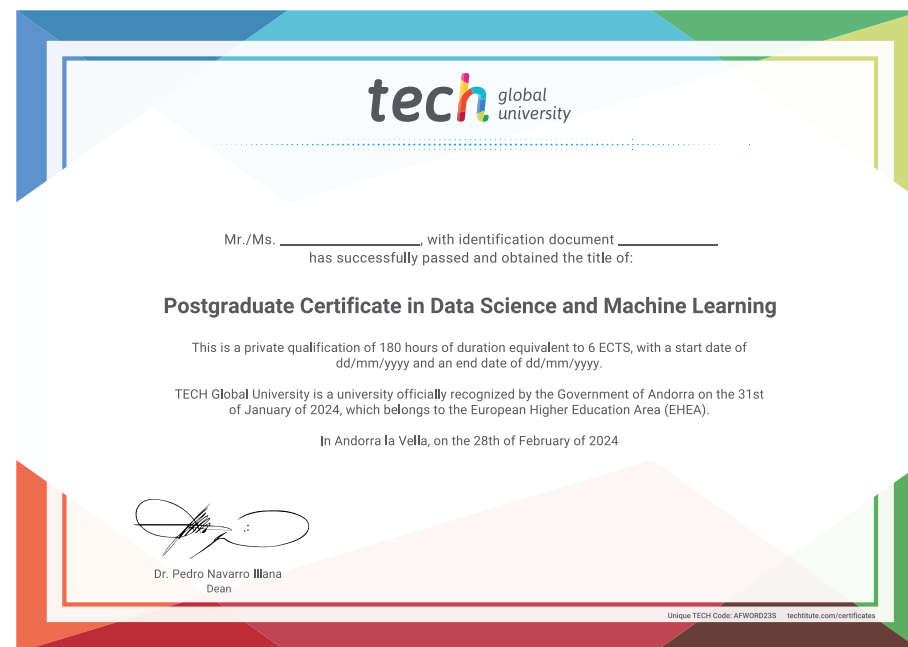
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Data Science and Machine Learning**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate Data Science and Machine Learning

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Postgraduate Certificate

Data Science and Machine Learning