Postgraduate Certificate

Algorithmic Trading Strategies

tech global university

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Postgraduate Certificate
Algorithmic Trading Strategies

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

Website: **www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/algorithmic-trading-strategies**

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01

Introduction

The use of AI-driven Algorithmic Trading Strategies is transforming the financial landscape. These technologies make it possible to analyze large volumes of data in real time, identifying patterns and optimizing trade execution more efficiently. Among the most prominent strategies are high-frequency trading, which is based on making multiple trades at extraordinary speeds, and trend-following strategies, which seek to capitalize on market price movements. In this scenario, TECH has created a totally virtual program that will ideally adapt to the graduates' work and personal schedules, using the innovative learning methodology called Relearning.

With this 100% online Postgraduate Certificate, you will gain a solid understanding of the tools and techniques needed to develop automated trading systems, adapting yourself to a constantly evolving market"

Artificial Intelligence-driven Algorithmic Trading Strategies are transforming the financial landscape, allowing traders to optimize their decisions through predictive analytics and automation. These technologies, which range from robo-advisors to advanced trading platforms, allow large volumes of data to be processed in real time, identifying complex patterns that may be invisible to the human eye.

This is how this Postgraduate Certificate was created, in which professionals will be able to analyze various Machine Learning techniques to improve the efficiency and effectiveness of their operations. In addition, the integration of predictive models and advanced algorithms will be emphasized, providing the necessary tools to make informed decisions in the dynamic environment of financial markets.

Advanced techniques, such as backtesting, will be used to test strategies on historical data and validate their performance before implementing them in real time. We will also delve into the use of Machine Learning to adjust and refine these strategies, with the aim of maximizing returns and reducing the risks associated with investments. This hands-on approach will ensure that experts are able to develop robust and adaptive strategies.

Finally, knowledge will be acquired on how to set appropriate limits and controls to minimize potential losses and maximize profitability. In this regard, different methodologies for assessing the risk associated with each strategy will be analyzed and best practices will be discussed to ensure that operations are not only profitable, but also safe. In this way, professionals will be prepared to face the challenges of online trading.

In this way, TECH has designed a complete online program that only requires an electronic device with Internet access to access all educational materials. This eliminates problems such as the need to travel to a physical location and the imposition of a rigid schedule. In addition, it will be based on the innovative Relearning methodology, which focuses on the repetition of key concepts to ensure proper understanding of the content.

This **Postgraduate Certificate in Algorithmic Trading Strategies** 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 Artificial Intelligence applied to Stock Exchanges and Financial Markets
- The graphic, schematic, and practical contents with which they are created, provide practical information on the 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
- The availability of access to the contents from any fixed or portable device with an Internet connection

The use of Machine Learning and advanced data analytics will foster your ability to make more informed and accurate decisions, increasing your chances of operational success. What are you waiting for to enroll?"

You will develop an in-depth understanding of risk mitigation techniques, to make your strategies profitable and safe, thanks to a comprehensive library of innovative multimedia resources"

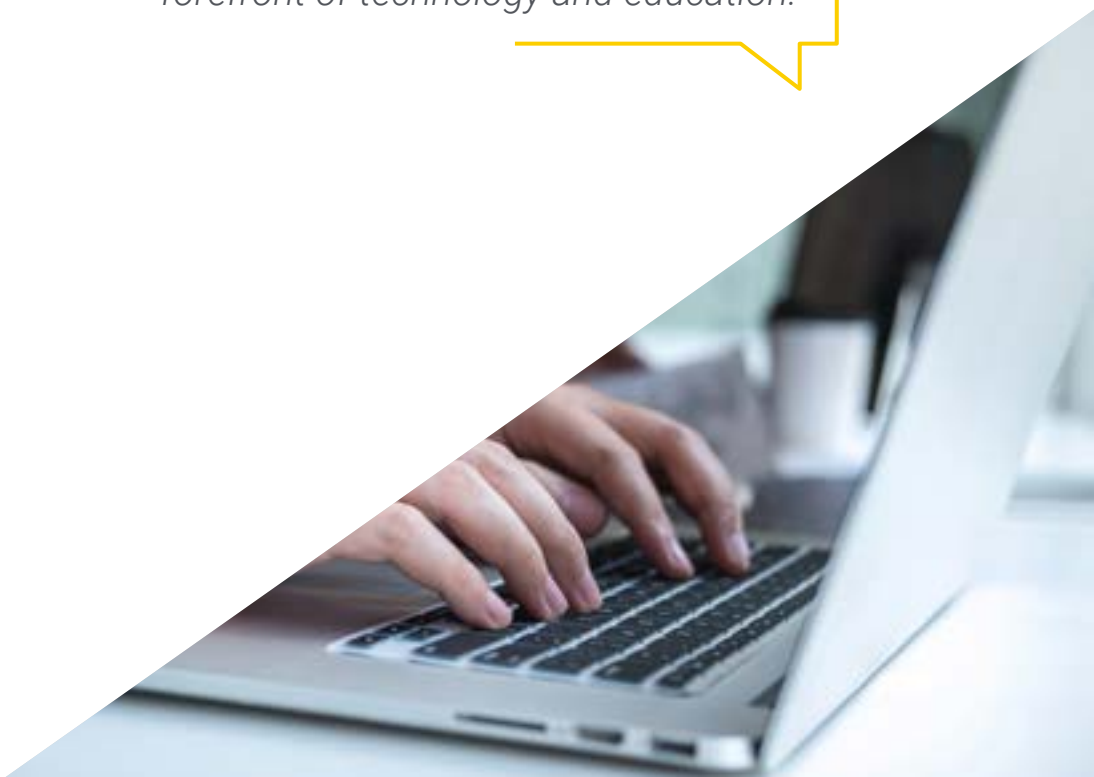
You will integrate Machine Learning techniques that will allow you not only to automate trading decisions, but also to optimize trading performance. With all TECH's quality guarantees!

You will delve into the evaluation and optimization of trading strategies through advanced techniques, such as backtesting, through the best teaching materials, at the forefront of technology and education.

The program's teaching staff includes professionals from the sector who bring to this training the experience of their work, as well as recognized specialists from prestigious reference societies and universities.

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

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the course. For this purpose, students will be assisted by an innovative interactive video system created by renowned experts in the field of educational coaching with extensive experience.



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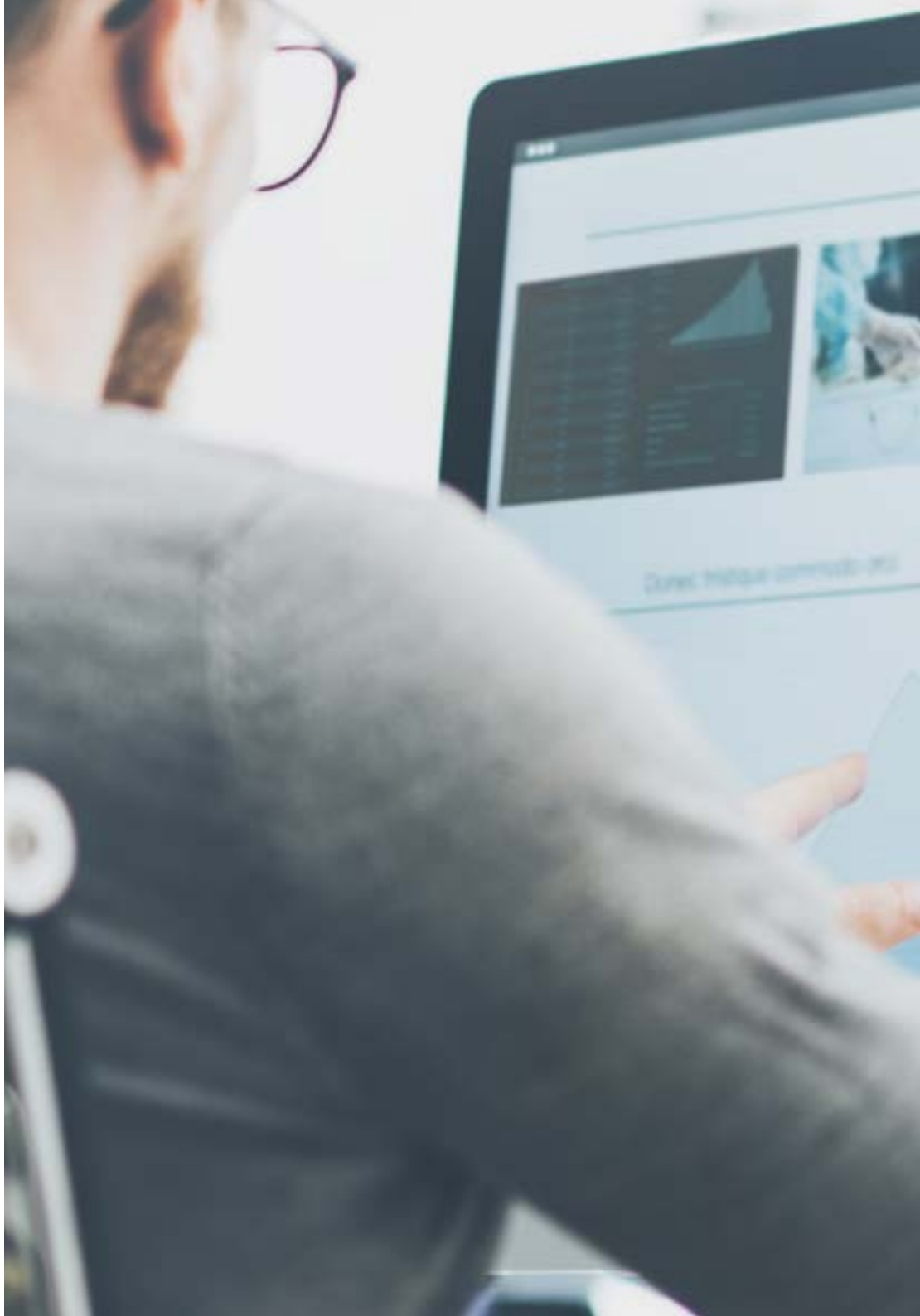
Objectives

This university program will seek for professionals to acquire skills in the integration of Artificial Intelligence and Machine Learning techniques to improve the accuracy and effectiveness of their trading strategies. In addition, experts will be able to evaluate and optimize these strategies through advanced backtesting and data analysis methodologies, ensuring superior performance in the financial markets. They will also develop a solid understanding of risk management practices, preparing them to trade responsibly and profitably in the financial environment.

The objectives of the Postgraduate Certificate will be to provide graduates with comprehensive training, enabling them to master the design and implementation of automated trading systems through AI"

General Objectives

- Develop a thorough understanding of the ethical and regulatory challenges associated with the use of Artificial Intelligence in finance
- Equip students with the tools and knowledge necessary to develop innovative financial solutions that integrate Artificial Intelligence
- Develop skills in portfolio optimization and financial risk management using genetic algorithms and other advanced Artificial Intelligence techniques to maximize return and minimize investment risk
- Provide the necessary tools and techniques to implement and optimize high-frequency trading strategies, using Machine Learning models to improve the speed and accuracy of order execution



Specific Objectives

- Acquire the necessary skills to design and develop automated trading systems, integrating Machine Learning techniques to improve the efficiency and effectiveness of operations
- Learn to evaluate and optimize trading strategies using advanced techniques such as backtesting and Machine Learning, with the objective of maximizing performance in the financial markets
- Develop a thorough understanding of risk management techniques as applied to algorithmic trading, ensuring that strategies are both profitable and safe

You will address risk management, a crucial aspect that will ensure you pursue profitability in a safe and sustainable way, at the hands of the best online university in the world, according to Forbes: TECH"

03

Course Management

The faculty are highly qualified professionals with vast experience in the financial and technological fields. In fact, they come from the industry, having worked in financial institutions, technology companies and startups specialized in algorithmic trading, providing a practical and up-to-date perspective on market trends. In addition, they have a solid academic background in disciplines such as finance and Artificial Intelligence, which will ensure that the contents are taught with rigor and depth.

This teaching team will not only be dedicated to teaching, but will also guide graduates in the development of projects, as well as fostering a collaborative and enriching learning environment"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shepherds GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- PhD in Psychology from the University of Castilla La Mancha
- PhD in Economics, Business and Finance from the Camilo José Cela University
- PhD in Psychology from University of Castilla La Mancha
- Master's Degree in Executive MBA from the Isabel I University
- Master's Degree in Sales and Marketing Management, Isabel I University
- Expert Master's Degree in Big Data by Hadoop Training
- Master's Degree in Advanced Information Technologies from the University of Castilla La Mancha
- Member of: SMILE Research Group

Professors

Mr. Sánchez Mansilla, Rodrigo

- Digital Advisor at AI Shepherds GmbH
- Digital Account Manager at Kill Draper
- Head of Digital at Kuarere
- Digital Marketing Manager at Arconi Solutions, Deltoid Energy and Brinergy Tech
- *Founder and National Sales and Marketing Manager*
- Master's Degree in Digital Marketing (MDM) by The Power Business School
- Bachelor's Degree in Business Administration (BBA) from the University of Buenos Aires

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

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Structure and Content

The contents will include an introduction to the basics of algorithmic trading, covering aspects such as financial markets, asset types and trading structures. Therefore, the implementation of Machine Learning techniques for the creation of predictive models will be covered in depth. Backtesting, strategy optimization and performance analysis will also be addressed, allowing you to evaluate the effectiveness of your systems on historical data. In addition, topics on risk management and market regulation will be integrated, ensuring that professionals understand the importance of operating in an ethical and responsible manner.

The content of a Postgraduate Certificate in Algorithmic Trading Strategies with Artificial Intelligence is designed to provide students with a comprehensive and applied knowledge in this field"

Module 1. Algorithmic Trading Strategies

1.1. Fundamentals of Algorithmic Trading
- 1.1.1. Algorithmic Trading Strategies
- 1.1.2. Key Technologies and Platforms for the Development of Algorithmic Trading Algorithms
- 1.1.3. Advantages and Challenges of Automated Trading versus Manual Trading

1.2. Design of Automated Trading Systems
- 1.2.1. Structure and Components of an Automated Trading System
- 1.2.2. Algorithm Programming: from the Idea to the Implementation
- 1.2.3. Latency and Hardware Considerations in Trading Systems

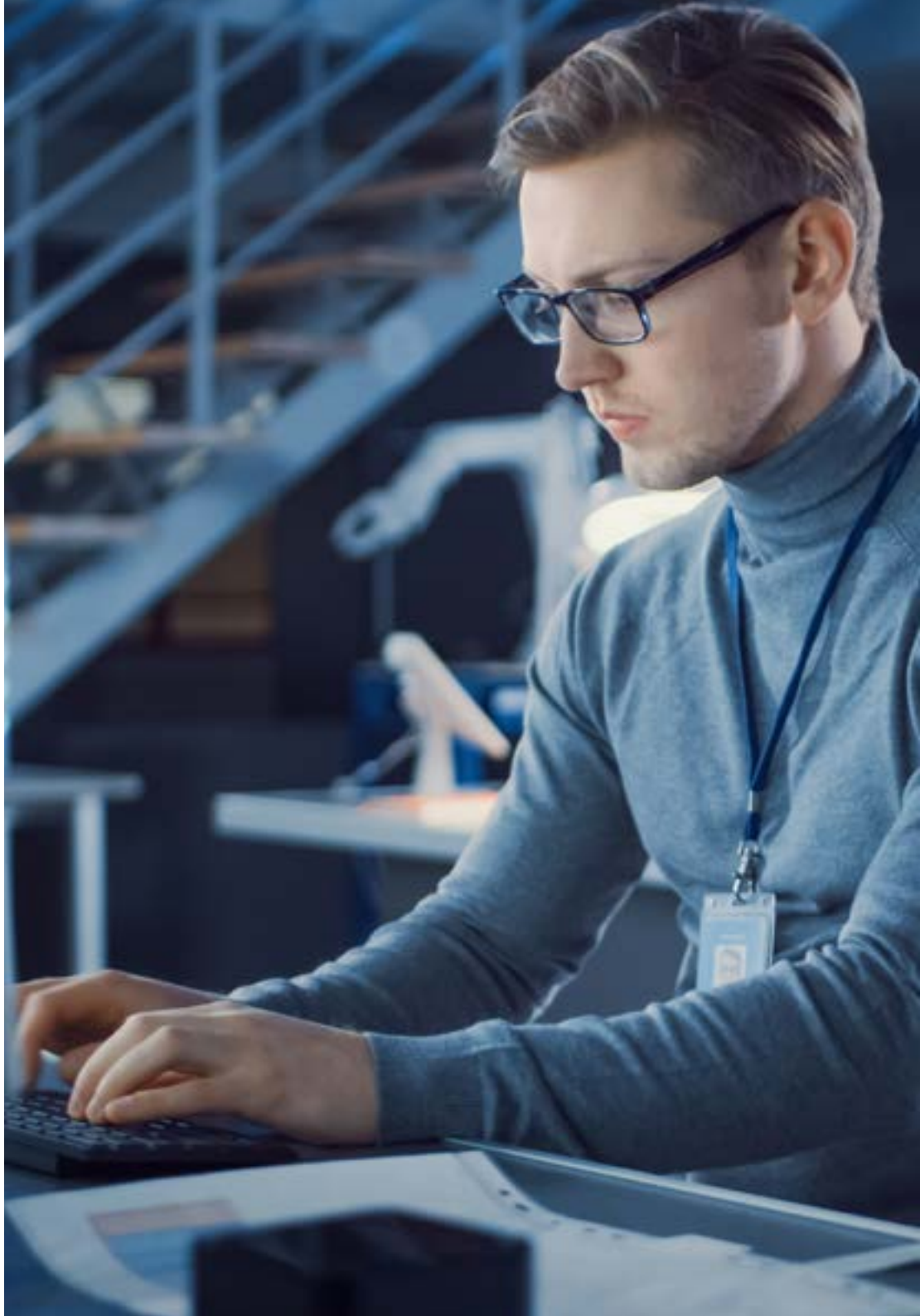
1.3. Backtesting and Evaluation of Trading Strategies
- 1.3.1. Methodologies for Effective Backtesting of Algorithmic Strategies
- 1.3.2. Importance of Quality Historical Data in Backtesting
- 1.3.3. Key Performance Indicators for Evaluating Trading Strategies

1.4. Optimizing Strategies with Machine Learning
- 1.4.1. Applying Supervised Learning Techniques in Strategy Improvement
- 1.4.2. Using Particle Swarm Optimization and Genetic Algorithms
- 1.4.3. Challenges of Overfitting in Trading Strategy Optimization

1.5. High Frequency Trading (HFT)
- 1.5.1. Principles and Technologies behind HFT
- 1.5.2. Impact of HFT on Market Liquidity and Volatility
- 1.5.3. Common HFT Strategies and Their Effectiveness

1.6. Order Execution Algorithms
- 1.6.1. Types of Execution Algorithms and Their Practical Application
- 1.6.2. Algorithms for Minimizing the Market Impact
- 1.6.3. Using Simulations to Improve Order Execution

1.7. Arbitration Strategies in Financial Markets
- 1.7.1. Statistical Arbitrage and Price Merger in Markets
- 1.7.2. Index and ETF Arbitrage
- 1.7.3. Technical and Legal Challenges of Arbitrage in Modern Trading



1.8. Risk Management in Algorithmic Trading
- 1.8.1. Risk Measures for Algorithmic Trading
- 1.8.2. Integrating Risk Limits and Stop-Loss in Algorithms
- 1.8.3. Specific Risks of Algorithmic Trading and How to Mitigate Them

1.9. Regulatory Aspects and Compliance in Algorithmic Trading
- 1.9.1. Global Regulations Impacting Algorithmic Trading
- 1.9.2. Regulatory Compliance and Reporting in an Automated Environment
- 1.9.3. Ethical Implications of Automated Trading

1.10. Future of Algorithmic Trading and Emerging Trends
- 1.10.1. Impact of Artificial Intelligence on the Future Development of Algorithmic Trading
- 1.10.2. New Blockchain Technologies and Their Application in Algorithmic Trading
- 1.10.3. Trends in Adaptability and Customization of Trading Algorithms

Not only will you enrich your professional profile, but you will also open doors to diverse job opportunities in an industry that increasingly demands experts in algorithmic trading and data analysis"

05

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 has been the most widely used learning system among the world's leading Information Technology 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 that you are presented with in the case method, an action-oriented learning method. Throughout the course, students 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

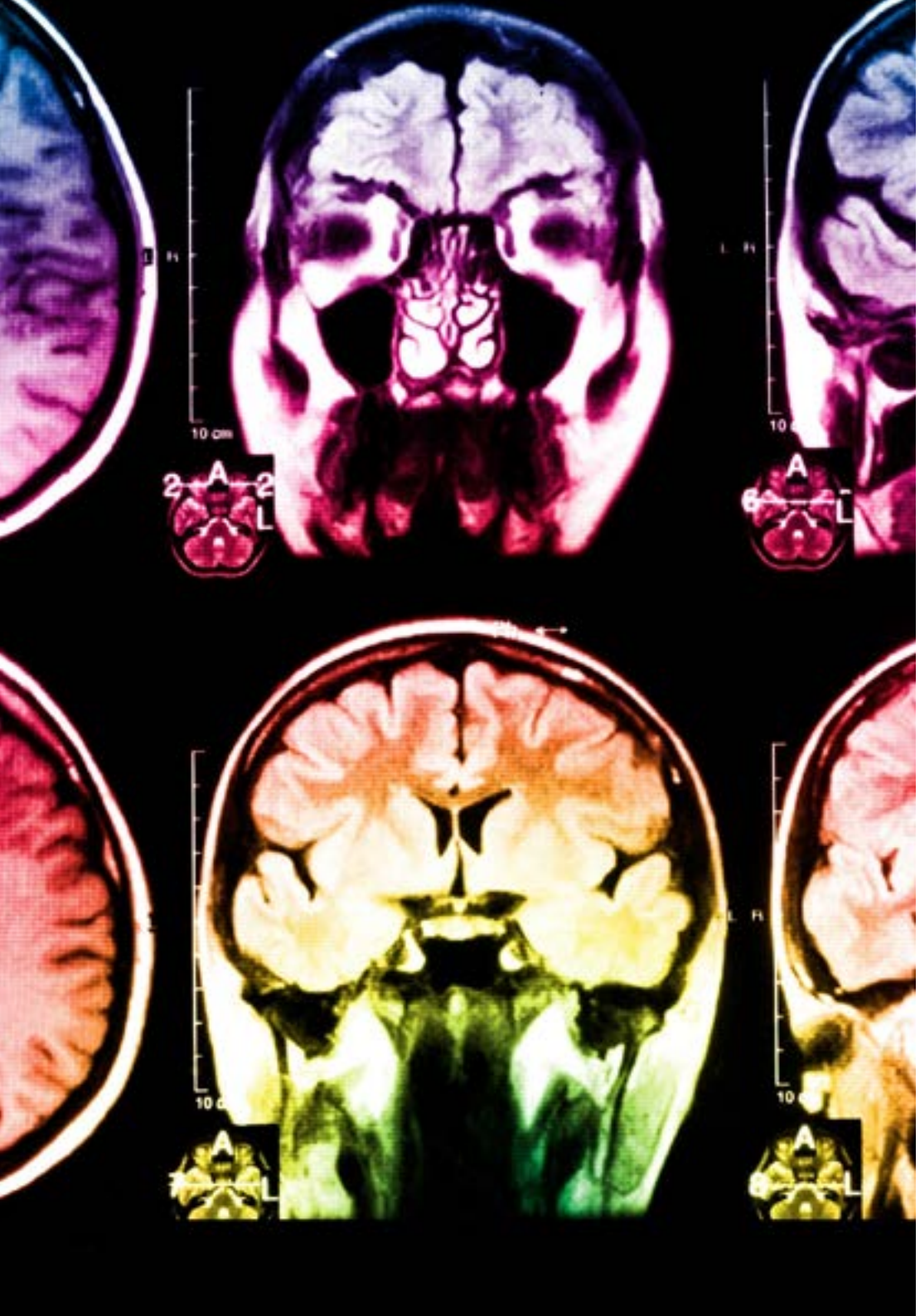
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

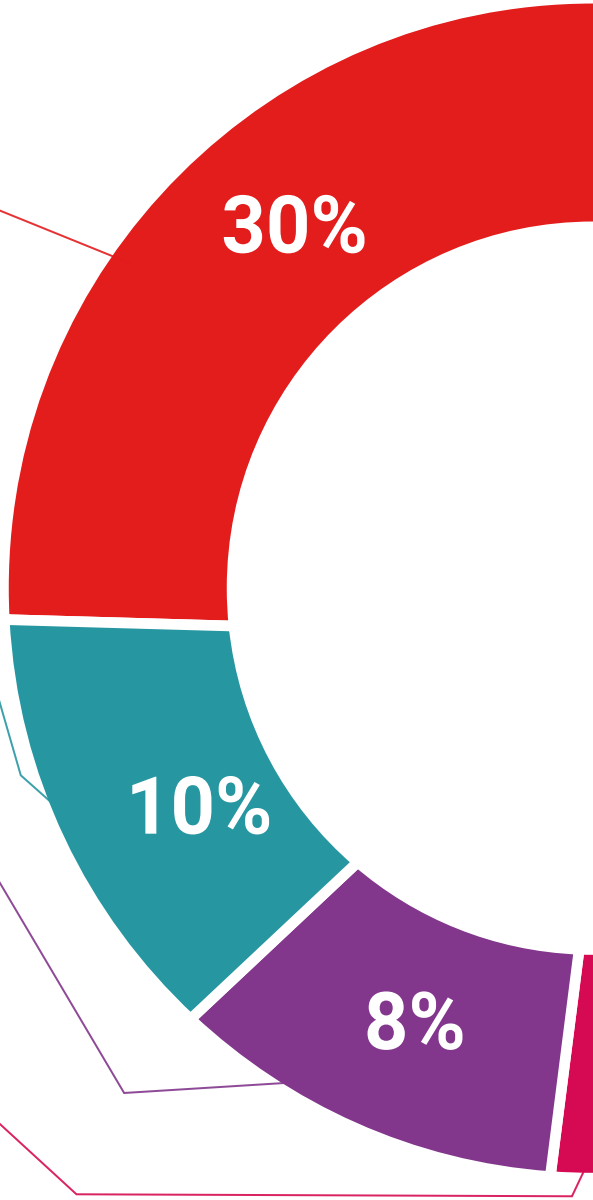
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

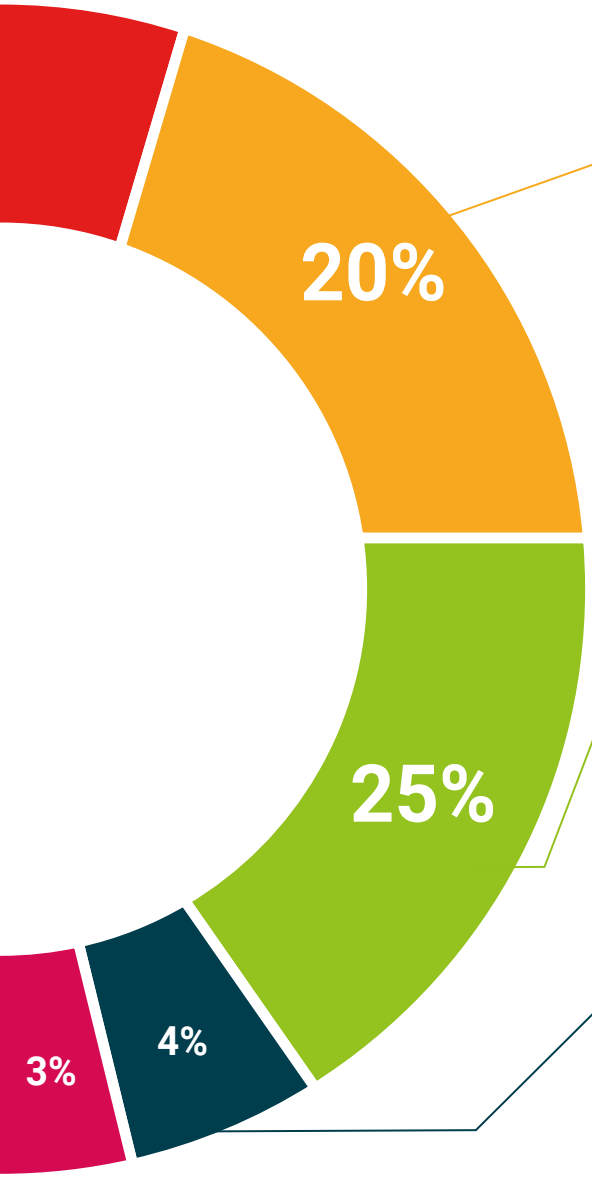
Practising Skills and Abilities

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.

06

Certificate

The Postgraduate Certificate in Algorithmic Trading Strategies guarantees, in addition to the most accurate 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 private qualification will allow you to obtain a **Postgraduate Certificate in Algorithmic Trading Strategies** 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 Algorithmic Trading Strategies**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**


tech global university

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

Postgraduate Certificate in Algorithmic Trading Strategies

This is a private qualification of 180 hours of duration equivalent to 6 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

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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