

Postgraduate Certificate

Algorithmic Trading in Financial Markets





Postgraduate Certificate Algorithmic Trading in Financial Markets

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

Website: www.techtitude.com/us/school-of-business/postgraduate-certificate/algorithmic-trading-financial-markets

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01

Introduction to the Program

The Association of Financial Markets Operators (ACI FMA) emphasizes that execution speed and real-time data management are critical in today's markets, where trade automation has become the norm. In this context, the global adoption of algorithmic trading requires professionals to have a deep understanding of its infrastructure, market microstructure, and financial instruments. To meet this demand, TECH has designed this comprehensive university program to equip professionals with the tools needed to navigate and thrive in this high-tech environment. All of this is delivered through a dynamic, innovative, and 100% online methodology.



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Thanks to this 100% online and comprehensive program, you will master Algorithmic Trading in Financial Markets”

The global financial sector moves at a dizzying pace, driven by technological innovation. As a result, the ability to execute trades with precision, speed, and scalability has become a key differentiator. From this perspective, traders and analysts face the challenge of processing massive volumes of data, understanding the dynamics of high-frequency markets, and mitigating risks in environments where decisions are made in milliseconds. Adapting to this reality is not optional—it is essential for competitiveness.

In this context, where the comprehensive management of automation and technological infrastructure is crucial for success, this Postgraduate Certificate in Algorithmic Trading in Financial Markets from TECH stands out as the ideal option for gaining a global perspective in this field. Through a multidisciplinary approach, professionals will acquire essential knowledge about financial instruments, market structure and functioning, microstructure, risks, and regulatory frameworks.

In addition, this academic qualification will explore order types and execution, the role of financial intermediaries, macroeconomic factors affecting markets, and recent innovations such as digitalization, blockchain, cryptocurrencies, and asset tokenization—offering a complete perspective on the automated trading ecosystem.

This academic program is delivered through a 100% online methodology, providing professionals with the flexibility to balance their academic development with work and personal responsibilities. Course content is accessible 24 hours a day, 7 days a week, from any device with an internet connection. Moreover, the learning experience is enhanced through the implementation of the Relearning method, which facilitates the assimilation of key concepts through structured repetition.

This **Postgraduate Certificate in Algorithmic Trading in Financial Markets** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ The development of practical case studies presented by experts in Algorithmic Trading in Financial Markets
- ♦ 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
- ♦ 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



Through this comprehensive academic opportunity, you will be trained to manage investment automation and financial market analysis"

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The wide range of practical resources offered in this university program will help you reinforce the theoretical knowledge of algorithmic trading in financial markets”

The faculty includes professionals from the field of algorithmic trading in financial markets who bring their hands-on experience to the program, along with renowned specialists from leading institutions 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.

A 100% online program that allows you to study anytime, from anywhere in the world, refining your skills day by day.

TECH will provide you with the most innovative instructional methodology in today's academic landscape, enabling you to master this field.



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.

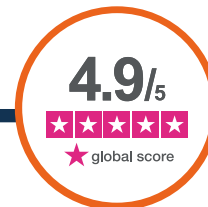
Leaders in employability

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

The teaching materials that make up this program have been developed by financial market professionals and experts in algorithmic trading. As a result, the syllabus offers a global perspective on financial markets, including their instruments, structure, and functioning. In addition, the syllabus delves into market microstructure, risks, regulations and compliance, order types and execution, financial intermediaries, macroeconomic factors, and recent innovations—preparing graduates to understand and operate within the complex environment of automated trading.





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You will gain comprehensive mastery of the structure of financial markets and the fundamentals of Algorithmic Trading—from instruments to order execution”

Module 1. Algorithmic Trading in Financial Markets

- 1.1. Global Overview of Financial Markets
 - 1.1.1. Elements of a Financial System
 - 1.1.2. History and Evolution of Financial Markets
 - 1.1.3. Types of Financial Markets
 - 1.1.4. Participants in the Markets
 - 1.1.5. Trading Robots as Market Participants
- 1.2. Financial Instruments for Trading
 - 1.2.1. Stocks, Bonds, and Derivatives
 - 1.2.2. Spot and Futures Markets
 - 1.2.3. ETFs and Other Investment Vehicles
- 1.3. Market Structure and Functioning
 - 1.3.1. Trading Hours and Mechanisms
 - 1.3.2. Organized and OTC Markets
 - 1.3.3. Price Formation
- 1.4. Market Microstructure and Its Influence on Trading
 - 1.4.1. Market Depth and Liquidity
 - 1.4.2. Spread and Transaction Costs
 - 1.4.3. Role of Market Makers
- 1.5. Risks in Financial Markets
 - 1.5.1. Market, Credit, and Liquidity Risks
 - 1.5.2. Systemic Risk
 - 1.5.3. Risk Management and Hedging
- 1.6. Regulation and Standards
 - 1.6.1. European and Global Regulations
 - 1.6.2. Market Supervision
 - 1.6.3. Investor Protection
- 1.7. Order Types and Execution
 - 1.7.1. Market and Limit Orders
 - 1.7.2. Stop Loss and Take Profit Orders
 - 1.7.3. Trailing Stop Orders
 - 1.7.4. Order Programming in Algorithmic Trading





- 1.8. Financial Intermediaries
 - 1.8.1. Banks, Brokers, and Hedge Funds
 - 1.8.2. Investment Funds and ETFs
 - 1.8.3. Trading Platforms
- 1.9. Macroeconomic Factors in the Markets
 - 1.9.1. Monetary and Fiscal Policy
 - 1.9.2. Key Economic Indicators
 - 1.9.3. Impact of News and Events
- 1.10. Innovation in Financial Markets
 - 1.10.1. Digitalization and Blockchain
 - 1.10.2. Cryptocurrencies and DeFi
 - 1.10.3. Tokenization of Assets

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Through this module, you will master the foundations of Algorithmic Trading, from an in-depth understanding of financial markets to execution strategies and risk management in trading operations”

04

Teaching Objectives

The syllabus design of this program aims to equip finance professionals with essential skills for the automation of trading operations. It will enable them to understand the programming of strategies, performance evaluation, and risk management in financial environments. Additionally, participants will develop expertise in market microstructure, financial data interpretation, and the integration of automated systems. This academic opportunity will enhance graduates' ability to optimize investment decisions and execute trading algorithms.





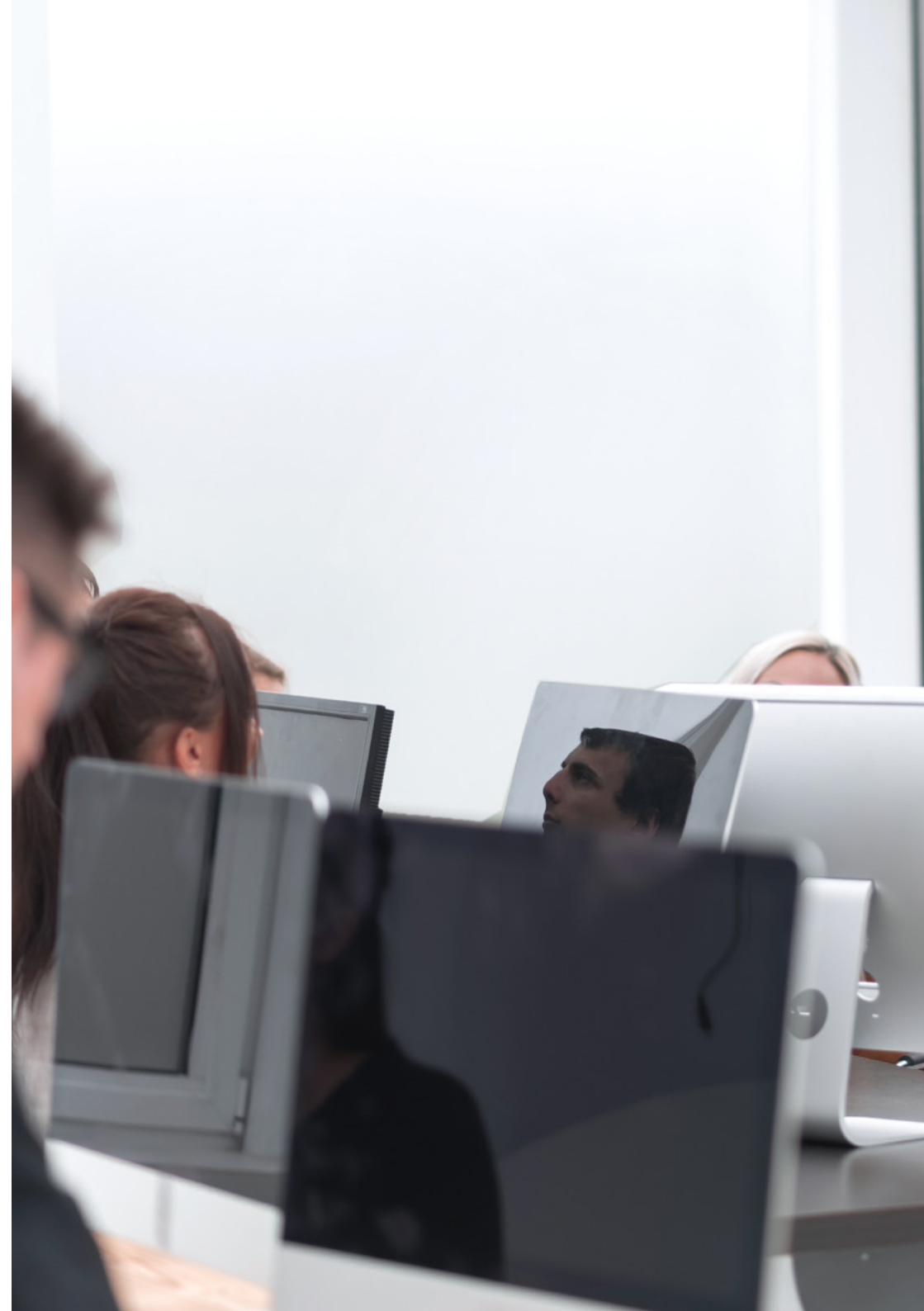
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You will transform your financial approach to optimize execution, manage risk, and succeed in the fast-paced dynamics of global markets”



General Objectives

- ♦ Master the fundamentals of Algorithmic Trading, including its philosophy, evolution, and advantages over manual trading
- ♦ Understand the structure and functioning of financial markets, identifying types of instruments and market participants
- ♦ Evaluate market microstructure, associated risks, and the regulations governing trading operations
- ♦ Identify different order types and their execution, as well as the role of financial intermediaries
- ♦ Analyze macroeconomic factors and technological innovations influencing financial markets
- ♦ Apply performance metrics and backtesting techniques to assess trading strategies
- ♦ Explore the infrastructure and hardware required for Algorithmic Trading
- ♦ Understand the limitations and challenges inherent to automated trading
- ♦ Foster a critical perspective on innovation in financial markets, including digitalization and blockchain
- ♦ Develop the ability to understand algorithmic operations and their impact on market dynamics





Specific Objectives

- ♦ Understand the global perspective of financial markets
- ♦ Analyze the components of a financial system and the evolution of markets
- ♦ Identify financial instruments used in trading and their characteristics
- ♦ Understand the structure and functioning of markets, including trading mechanisms and price formation



Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

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.

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*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

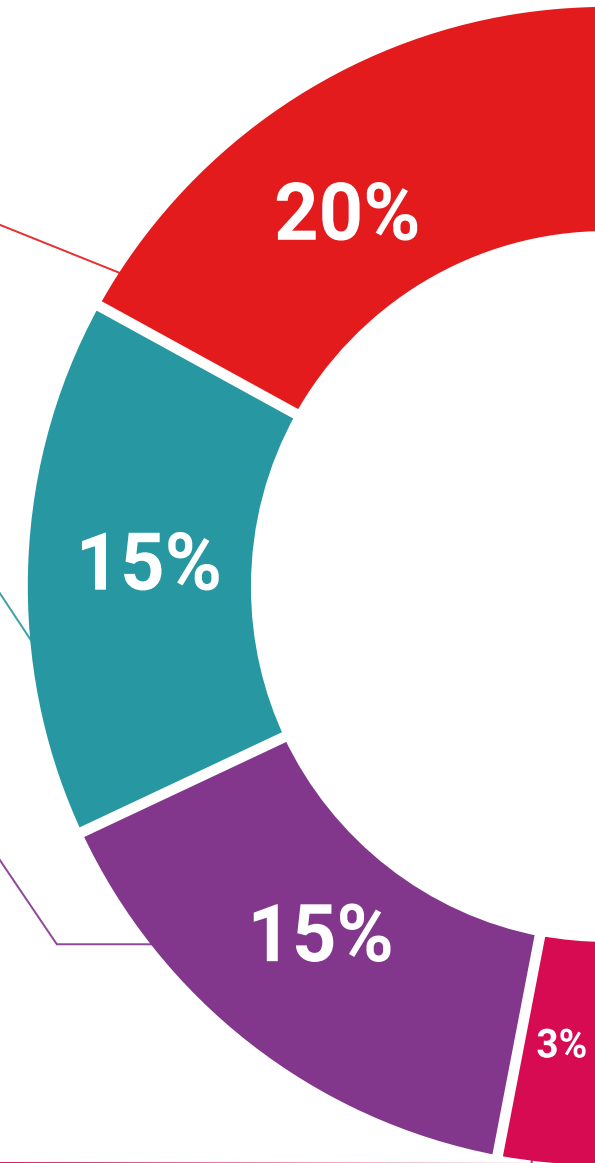
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

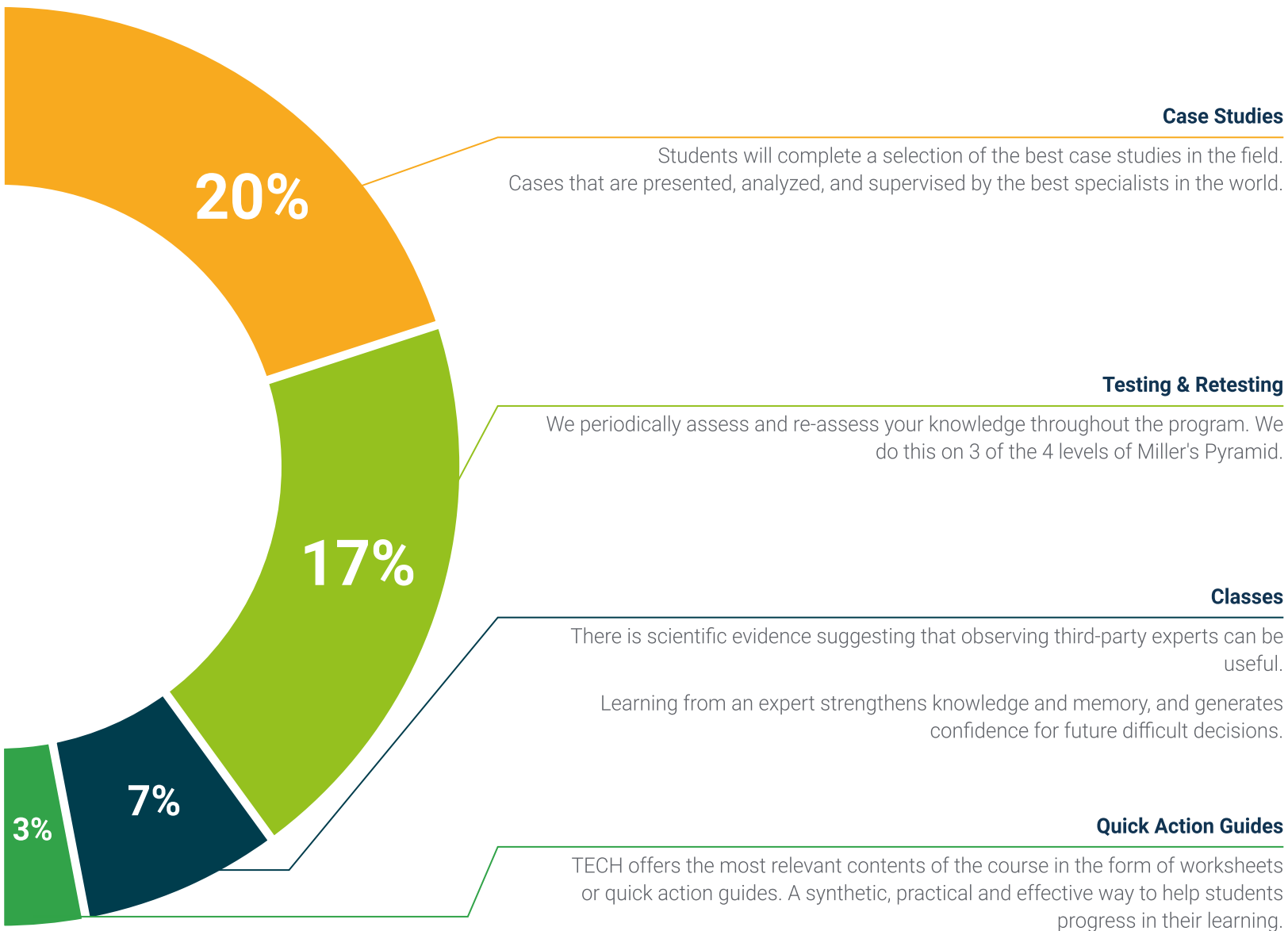
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

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





Case Studies



Testing & Retesting



Classes



Quick Action Guides



06 Teaching Staff

The faculty team of this program has been carefully selected for its strong professional and academic background in Algorithmic Trading and financial markets. These professionals not only possess deep theoretical knowledge but also have extensive hands-on experience in market operations, risk management, and the analysis of market microstructure. Their expertise in automation tools and understanding of financial sector dynamics ensures that graduates receive training aligned with the latest trends and best practices in trading.



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A renowned faculty member specialized in Algorithmic Trading will guide you with real-world experience and strategic insight into the financial sector”

Management



Dr. Gómez Martínez, Raúl

- ♦ Founding Partner and CEO of Open 4 Blockchain Fintech
- ♦ Founding Partner of *InvestMood Fintech*
- ♦ Apara's CEO
- ♦ PhD in Business Economics and Finance from the University Rey Juan Carlos de Madrid
- ♦ Bachelor's Degree in Economics and Business Administration, Complutense University of Madrid
- ♦ Master's Degree in Economic Analysis and Financial Economics, Complutense University of Madrid



Dr. Lara Bocanegra, Ana María

- ♦ Company Owner (Financial)
- ♦ Ph.D. from the University of Seville
- ♦ Trader of NYSE Stocks at World Trade Securities
- ♦ Junior Trader at Swiftrad
- ♦ Mechanical Behaviour of Materials from University of Seville
- ♦ Experimental Techniques II from University of Seville
- ♦ Materials Science from University of Seville
- ♦ Advanced Trading Stocks Techniques from University of Seville



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

07 Certificate

This Postgraduate Certificate in Algorithmic Trading in Financial Markets 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 Algorithmic Trading in Financial Markets** 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.

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Accreditation: **6 ECTS**



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