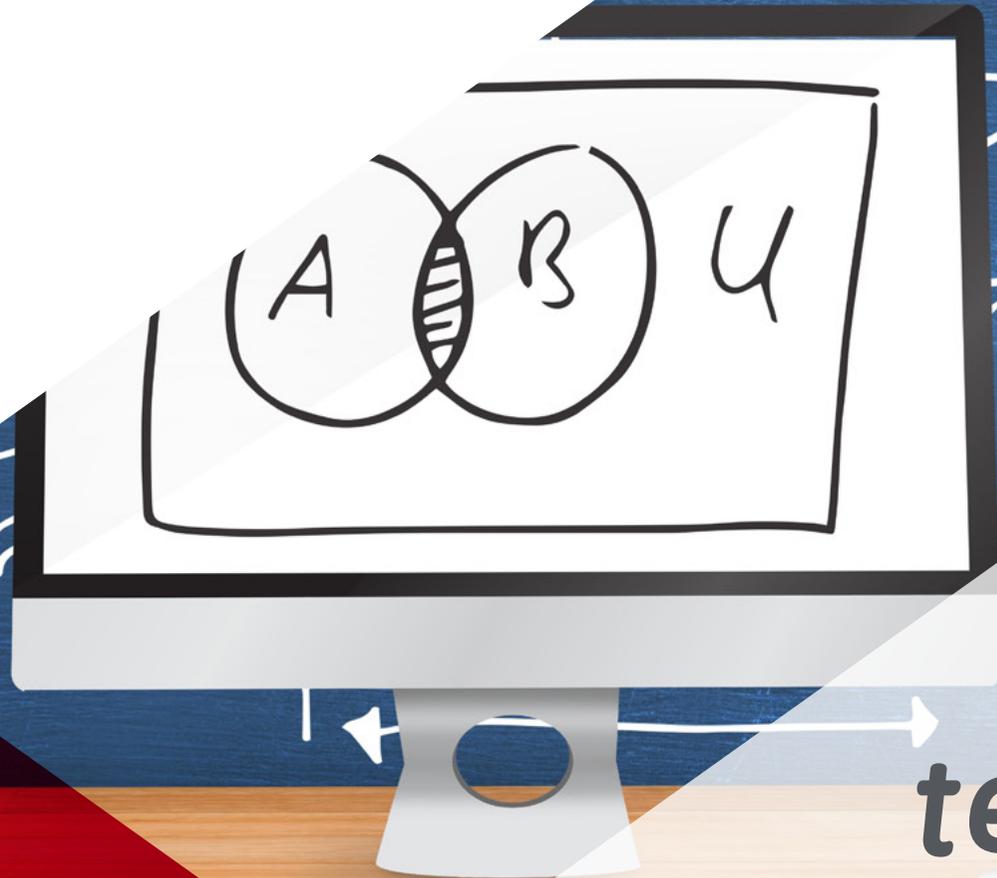


# Postgraduate Certificate Pedagogical Innovation in Mathematics





## Postgraduate Certificate Pedagogical Innovation in Mathematics

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 4 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/education/postgraduate-certificate/pedagogical-innovation-mathematics](http://www.techtute.com/us/education/postgraduate-certificate/pedagogical-innovation-mathematics)

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# 01

# Introduction

Educational centers are currently betting on introducing much more innovative and totally disruptive pedagogical methodologies with traditional teaching. Therefore, it is advisable for teachers to be aware of the advances in this field and master the different learning methods. In this sense, in areas such as mathematics it is even more imperative to apply attractive techniques to generate effective knowledge. For this reason this program is born, which introduces the professional in Multiple Intelligences, gamification, PBL or the creation of sessions based on Flipped Classroom. All this, in addition, with multimedia didactic material that can be accessed 24 hours a day, from any electronic device with internet connection.





“

*A 100% online Postgraduate Certificate that will allow you to master the most innovative pedagogical techniques applied to Mathematics”*

Educational systems are incorporating more and more competences that can be acquired by students through much more innovative methodologies based on games, problem solving in real situations or inquiry on the part of the student. Thanks to this step, the teaching-learning process is much more effective, as well as entertaining.

In this scenario, mathematics professionals have a wide range of pedagogical possibilities to successfully incorporate into their sessions. For this reason, TECH has created this 100% online program that introduces teachers to the basics of innovation, intellectual development and the latest methodologies.

All this, through an advanced syllabus, developed by an excellent teaching team with extensive experience in educational innovation and High Abilities. In this way, graduates will be able to follow an academic itinerary of 120 teaching hours focused on providing the most current information on gamification, the *Portfolio*, the landscape applied to mathematics or the comprehension projects applied to this subject.

In addition, thanks to the multimedia didactic resources, students will achieve a much more dynamic learning process and acquire new concepts in a simple way. Furthermore, with the *Relearning* system, based on the repetition of key content, they will not have to invest a large number of hours of study and memorization.

Undoubtedly, this academic institution offers an excellent opportunity to progress in teaching through a flexible Postgraduate Certificate. All you need is an electronic device (cell phone, computer or *tablet*) to access the content of this program. An ideal educational option for those seeking to improve their classroom practice, while at the same time making their daily responsibilities compatible.

This **Postgraduate Certificate in Pedagogical Innovation in Mathematics** contains the most complete and up-to-date educational program on the market. The most important features include:

- ♦ The examination of case studies presented by experts in High School Mathematics Teaching
- ♦ The graphic, schematic and practical contents of the book provide technical and practical information on those 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



*Bring to your classroom the most innovative methodologies: gamification, PBL or Cooperative Learning and improve mathematical learning”*

“

*Enter with this program into the exciting world of Multiple Intelligences and the revolution that Howard Gardner's theory brought about”*

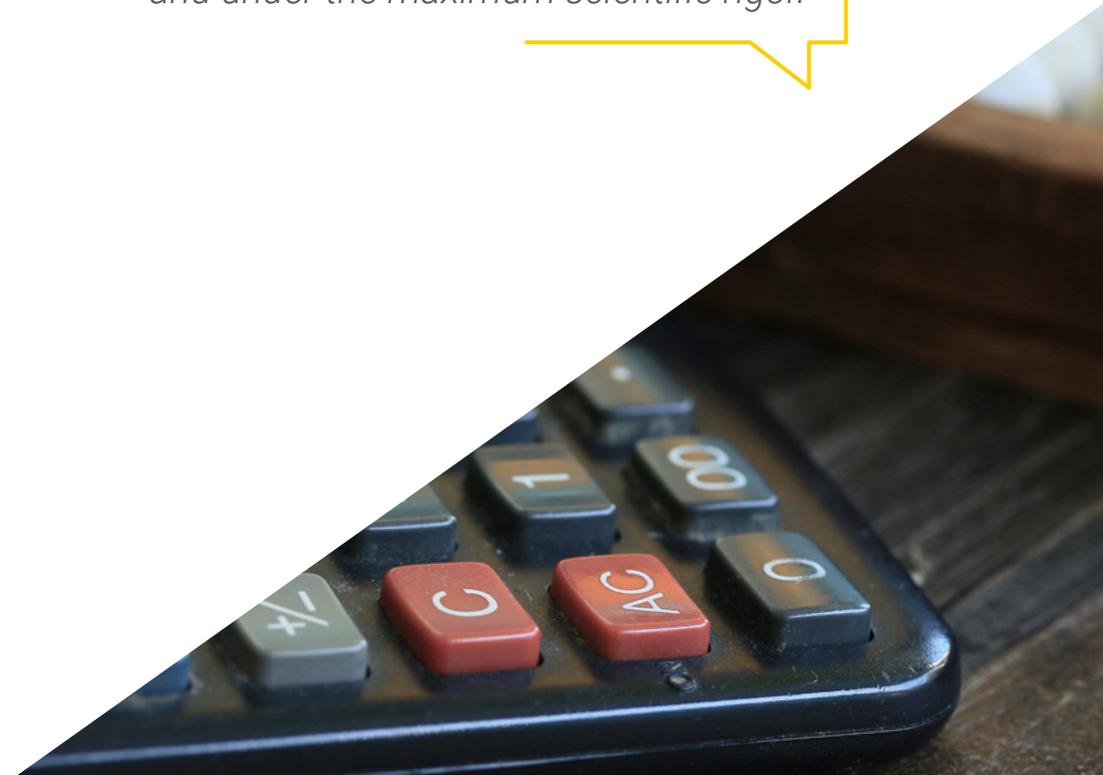
The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

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 students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Reduce the hours of study thanks to the Relearning method, used by TECH in all its programs.*

*Stand out in your teaching work by applying the most current pedagogy and under the maximum scientific rigor.*

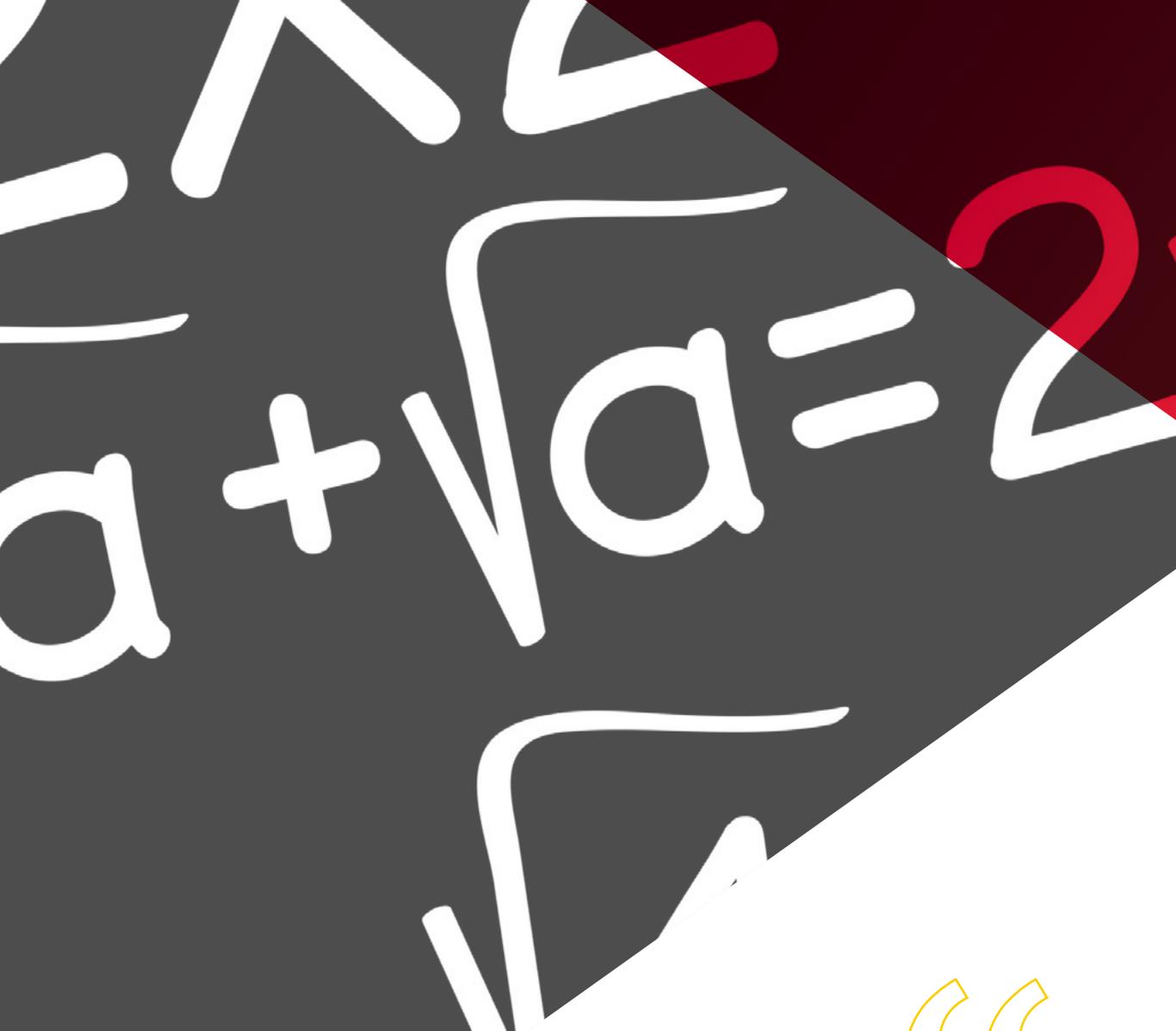


02

# Objectives

The main purpose of this Postgraduate Certificate is to provide teaching professionals with the most recent and current information on Pedagogical Innovation. For this purpose, it has a syllabus with a theoretical approach, complemented by case studies that will give them a practical vision and will allow them to apply the latest didactics in their mathematics classes.





$a + \sqrt{a} = 2\sqrt{a}$

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*Become a first level teacher by updating your knowledge on the most current pedagogy applied to mathematics”*



## General Objectives

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- Know the different types of innovative learning methodologies in education applied to mathematics
- Know how to apply the different types of innovative learning methodologies in education to Mathematics
- Know how to discern which is the most appropriate innovative learning method for a group of students studying mathematics in High School
- Learn to design a didactic unit using the different methodologies of innovation in mathematics education





### Specific Objectives

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- ♦ Be familiar with the methodologies for pedagogical innovation applied to mathematics
- ♦ Learn about the most important pedagogical innovation methodologies applied to mathematics in the educational system
- ♦ Learn about conductism in mathematics
- ♦ Learn about cognitivism in mathematics
- ♦ Learn about constructivism in mathematics
- ♦ Learn about Howard Gardner and his contribution to pedagogical innovation



*The teaching team of this program provides you with practical cases so that you can apply this methodology with guarantees in your classroom”*

03

# Course Management

The teaching team that integrates this university program has been selected by TECH, based on their many years in the education sector and their extensive knowledge of High Abilities and new teaching methodologies. An extensive professional background that is a guarantee for students who access this Postgraduate Certificate with the aim of acquiring advanced knowledge in Pedagogical Innovation from the hands of the best experts.





“

*You will have at your disposal an excellent teaching team with a long trajectory in educational teaching and experts in Pedagogical Innovation”*

## International Guest Director

Doctor Jack Dieckmann has been an outstanding Senior Mathematics Advisor, who has focused on the revision of curricular materials to strengthen language development in Mathematics. In fact, his expertise has encompassed the evaluation and improvement of educational resources, supporting the integration of effective classroom practices. In addition, he has held the position of Director of Research at Stanford University, where he has been dedicated to documenting the effectiveness of learning opportunities offered by Youcubed, including Jo Boaler's online courses on mathematical mindsets and other research-based materials.

In addition, throughout his career, he has held key roles at renowned institutions. Therefore, he has served as Associate Director of Curriculum at the Center for Assessment, Learning and Equity (SCALE), where he has led the Mathematics team in the development of performance assessments, demonstrating his ability to innovate in educational assessment and apply advanced teaching techniques.

In this sense, at the international level, Dr. Jack Dieckmann has been recognized for his impact on mathematics education, through his scientific participation in multiple activities. He has also obtained significant merits in his field, participating in conferences and consultancies in countries such as China, Brazil and Chile. As such, his work has been crucial for the implementation of best practices in mathematics teaching, and his experience has been instrumental in advancing mathematics education globally.

In this way, his further research has focused on "language for mathematical purposes", especially for students of English as a second language. In turn, he has continued to contribute to mathematics education through his work at Youcubed, as well as his consulting activities globally, demonstrating his position as an outstanding leader in the field.



## Dr. Dieckmann, Jack

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- Director of Research at Youcubed at Stanford University, San Francisco, United States
- Associate Director of Stanford's Center for Assessment, Learning and Equity (SCALE)
- Instructor at the Stanford Teacher Education Program (STEP)
- International Teaching Consultant in countries such as China, Brazil and Chile
- Ph.D. in Mathematics Education at Stanford GSE in 2009

“

*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Mr. Jurado Blanco, Juan

- ♦ Secondary School Teacher and Industrial Electronics Expert
- ♦ Mathematics and Informatics teacher in Compulsory Secondary Education at Santa Teresa de Jesús School in Vilanova and Geltrú.) Spain
- ♦ Expert in High Abilities
- ♦ Industrial Technical Engineer with Specialization in Industrial Electronics



## Professors

### Dr. De la Serna, Juan Moisés

- ♦ Psychologist and Writer expert in Neurosciences
- ♦ Writer specializing in Psychology and Neurosciences
- ♦ Author of the Open Chair in Psychology and Neurosciences
- ♦ Scientific disseminator
- ♦ PhD in Psychology
- ♦ Degree in Psychology. University of Seville
- ♦ Master's Degree in Neurosciences and Behavioral Biology Pablo de Olavide University, Seville
- ♦ Expert in Teaching Methodology. La Salle University
- ♦ University Specialist in Clinical Hypnosis, Hypnotherapy. National University of Distance Education - UNED
- ♦ Diploma in Social Graduate, Human Resources Management, Personnel Administration. University of Seville
- ♦ Expert in Project Management, Administration and Business Management. Federation of Services U.G.T
- ♦ Trainer of Trainers. Official College of Psychologists of Andalusia

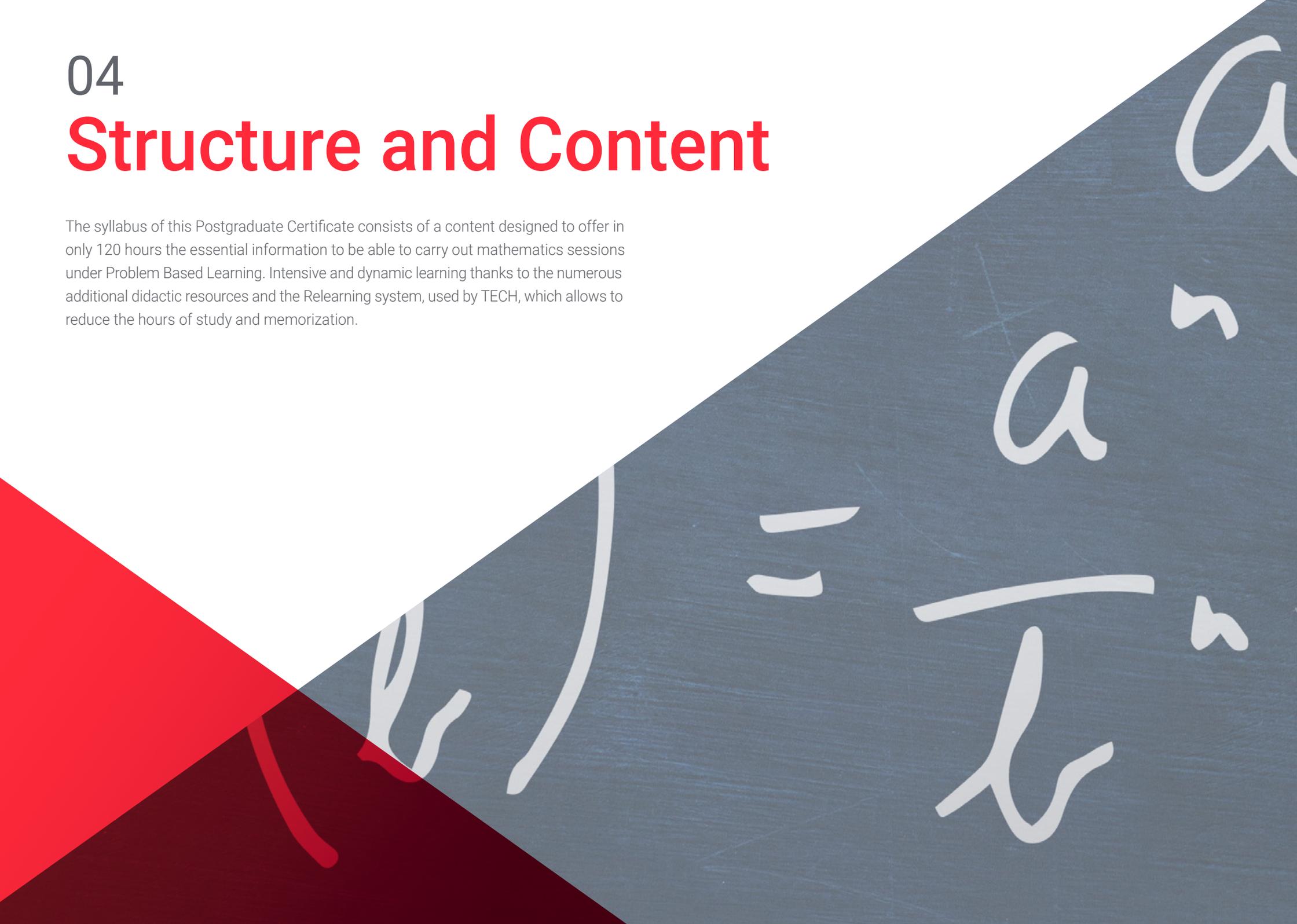
### Ms. Sánchez García, Manuela

- ♦ Licensed in biology
- ♦ Health Biology Specialty
- ♦ University Master's Degree in Teacher Training for Compulsory Secondary Education and Baccalaureate
- ♦ Vocational Training and Language Teaching
- ♦ Teacher of Mathematics in Compulsory Secondary Education at the Santa Teresa de Jesús School in Vilanova i la Geltrú

04

# Structure and Content

The syllabus of this Postgraduate Certificate consists of a content designed to offer in only 120 hours the essential information to be able to carry out mathematics sessions under Problem Based Learning. Intensive and dynamic learning thanks to the numerous additional didactic resources and the Relearning system, used by TECH, which allows to reduce the hours of study and memorization.





“

*Access multimedia pills, specialized readings or case studies whenever you want and from your computer with an Internet connection”*

## Module 1. Pedagogical Innovation in Mathematics

- 1.1. Today's classrooms: High School and Baccalaureate Students
  - 1.1.1. Intellectual Development
  - 1.1.2. Physical development
  - 1.1.3. Psychological Development
  - 1.1.4. Social Development
  - 1.1.5. Ethics-Affective and Moral Development
- 1.2. Basis of Pedagogical Innovation
  - 1.2.1. Behavioral Learning
  - 1.2.2. Cognitive Learning
  - 1.2.3. Constructivist Learning
  - 1.2.4. Education in the 21st Century
- 1.3. Howard Gardner
  - 1.3.1. Road Works
  - 1.3.2. Projects
  - 1.3.3. Awards
  - 1.3.4. Quotes
- 1.4. Multiple Intelligences for High School Students
  - 1.4.1. Linguistic Intelligence applied to Mathematics
  - 1.4.2. Logical-Mathematical Intelligence applied to Mathematics
  - 1.4.3. Spatial Intelligence applied to Mathematics
  - 1.4.4. Musical Intelligence Applied to Mathematics
  - 1.4.5. Body and Kinesthetic Intelligence applied to Mathematics
  - 1.4.6. Intrapersonal Intelligence applied to Mathematics
  - 1.4.7. Interpersonal Intelligence applied to Mathematics
  - 1.4.8. Natural Intelligence applied to Mathematics
  - 1.4.9. Existential Intelligence applied to Mathematics
  - 1.4.10. Howard Gardner's Multiple Intelligences Test





- 1.5. Innovative Pedagogical Methodologies in Mathematics
  - 1.5.1. Gamification in Mathematics
  - 1.5.2. Portfolios/e-Portfolios applied to Mathematics
  - 1.5.3. The Learning Landscape Applied to Mathematics
  - 1.5.4. Problem-Based Learning (PBL) in Mathematics
  - 1.5.5. Cooperative Learning in Mathematics
  - 1.5.6. Comprehension Projects applied to Mathematics
  - 1.5.7. Metacognitive Learning and Mathematics
  - 1.5.8. Flipped Classroom Applied to Mathematics
  - 1.5.9. Peer Mentoring in Mathematics
  - 1.5.10. Conceptual Jigsaw Puzzles applied to Mathematics
  - 1.5.11. Digital Murals Applied to Mathematics

“

*This program will allow you to delve into the educational challenges of the 21st century in an attractive way”*

05

# Methodology

This training program offers 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"*

## At TECH Education School we use the Case Method

In a given situation, what should a professional do? Throughout the program students will be presented with multiple simulated cases based on real situations, where they will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method.

*With TECH, educators can experience a learning methodology that is shaking the foundations of traditional universities around the world.*



*It is a technique that develops critical skills and prepares educators to make decisions, defend their arguments, and contrast opinions.*

“

*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

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

1. Educators who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process is solidly focused on practical skills that allow educators to better integrate the knowledge into daily practice.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life teaching.
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.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

Our University is the first in the world to combine case studies with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.



*Educators will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 85,000 educators with unprecedented success in all specialties. 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 specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialist educators who teach the course, specifically for the course, so that the teaching content is really 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.



### Educational Techniques and Procedures on Video

TECH introduces students to the latest techniques, with the latest educational advances, and to the forefront of Education. All this, first-hand, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

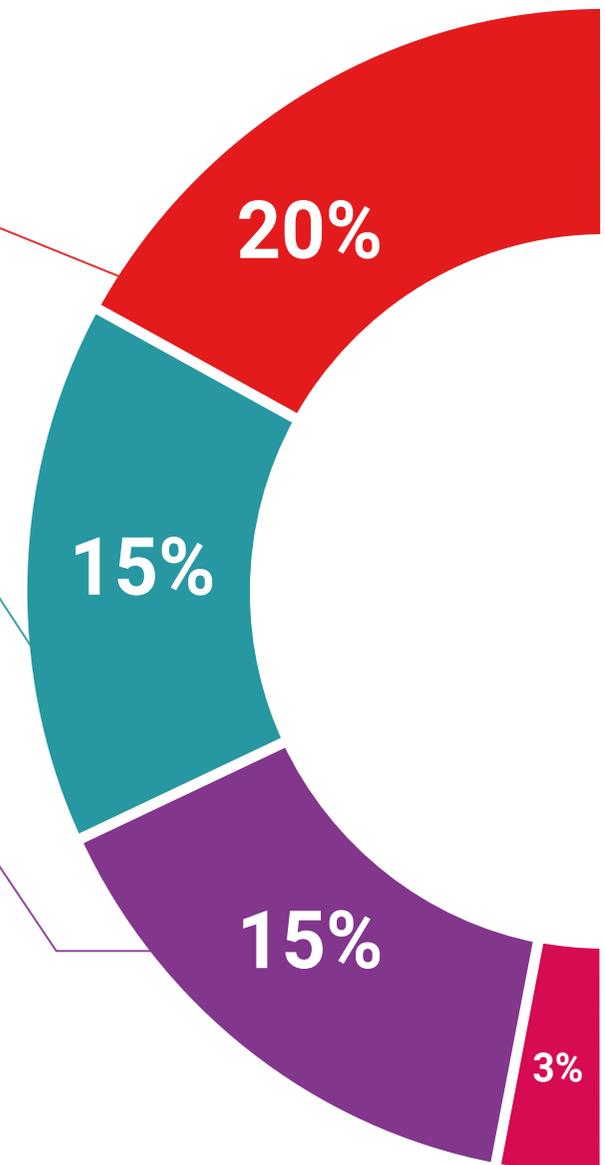
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

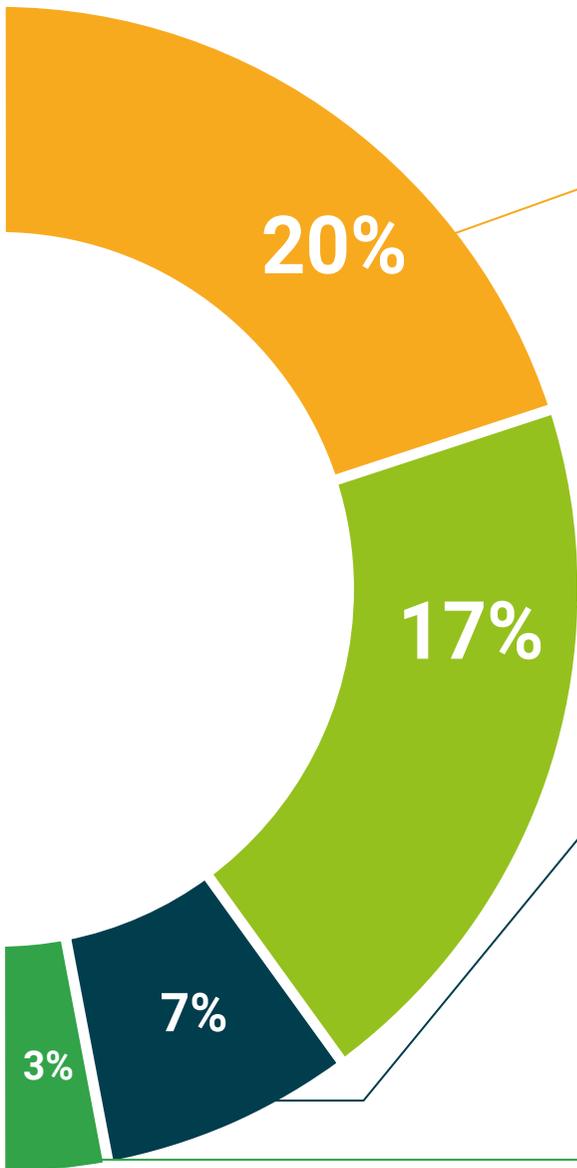
This exclusive multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".



### 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.





**Expert-Led Case Studies and Case Analysis**

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



**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 your goals.



**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.



**Quick Action Guides**

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



06

# Certificate

The Postgraduate Certificate in Pedagogical Innovation in Mathematics guarantees students, in addition to the most rigorous and up-to-date education, access to a 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 program will allow you to obtain your **Postgraduate Certificate in Pedagogical Innovation in Mathematics** 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.

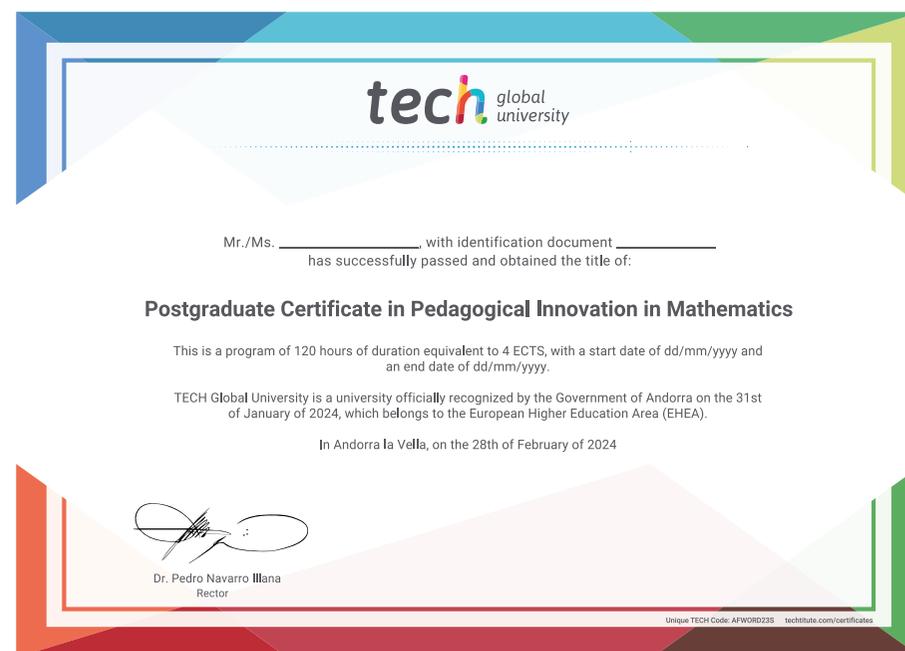
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Pedagogical Innovation in Mathematics**

Modality: **online**

Duration: **6 weeks**

Accreditation: **4 ECTS**



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development languages  
virtual classroom



**Postgraduate Certificate**  
**Pedagogical Innovation**  
**in Mathematics**

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
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# Postgraduate Certificate Pedagogical Innovation in Mathematics