

Postgraduate Certificate Didactics of Mathematics in High School





Postgraduate Certificate Didactics of Mathematics in High School

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: www.techtitute.com/us/education/postgraduate-certificate/didactics-mathematics-high-school

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01

Introduction

Bringing geometry, algebra, statistics or probability closer to secondary school students is a sometimes arduous task for teachers. However, the improvement in new teaching methodologies, pedagogical resources and in the knowledge of the learning of the subject itself have given a boost to the teaching process. To further promote this work, TECH has created this educational option that takes the teaching professional to delve into the Didactics of Mathematics through an advanced and 100% online syllabus. In addition, this program has an extensive library that can be accessed 24 hours a day, from any electronic device with an internet connection.





Update your didactic knowledge and design your educational units from start to finish with the best academic option”

The Didactics of Mathematics was born in France in 1970 and since then many researchers have dedicated their time to improve the learning of such a vital subject for the academic and professional development of people.

These studies have made it possible to delve into teaching methods, as well as the functioning of the human brain itself, in order to acquire mathematical concepts such as algebra, geometry or statistics. This is a daily task for the teacher who must bring numbers to teen students in an attractive way. In this line, TECH has designed this Postgraduate Certificate in Didactics of Mathematics in Secondary Education in 100% online modality.

This is an advanced program of 375 teaching hours, where students delve into the cognitive and metacognitive processes, memory, attention or the relationship of high abilities and giftedness with mathematics. In addition, this program will allow you to design a didactic unit, taking into account the educational level and all the elements (methods, objectives, resources and evaluation) that it must contain.

A Postgraduate Certificate designed by and for today's teachers who must know how to adapt their teaching to the diversity of the classroom and do it in an attractive way. To make this task even easier, TECH provides case studies, elaborated by specialized professionals, which will help them to create their own successful didactic units.

The teaching professionals are therefore faced with an unparalleled opportunity to perfect their classroom competencies through a program that they can access whenever and wherever they wish. It only need a an electronic device with Internet connection to be able to visualize, at any time, the contents hosted on the virtual platform.

This **Postgraduate Certificate in Didactics of Mathematics in High School** 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 Didactics of Mathematics in High School Education
- ♦ 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



Take a step forward in your teaching career through a 100% online and flexible Postgraduate Certificate"

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Enhance your work as a teacher through an advanced and dynamic syllabus thanks to the numerous additional resources provided by TECH”

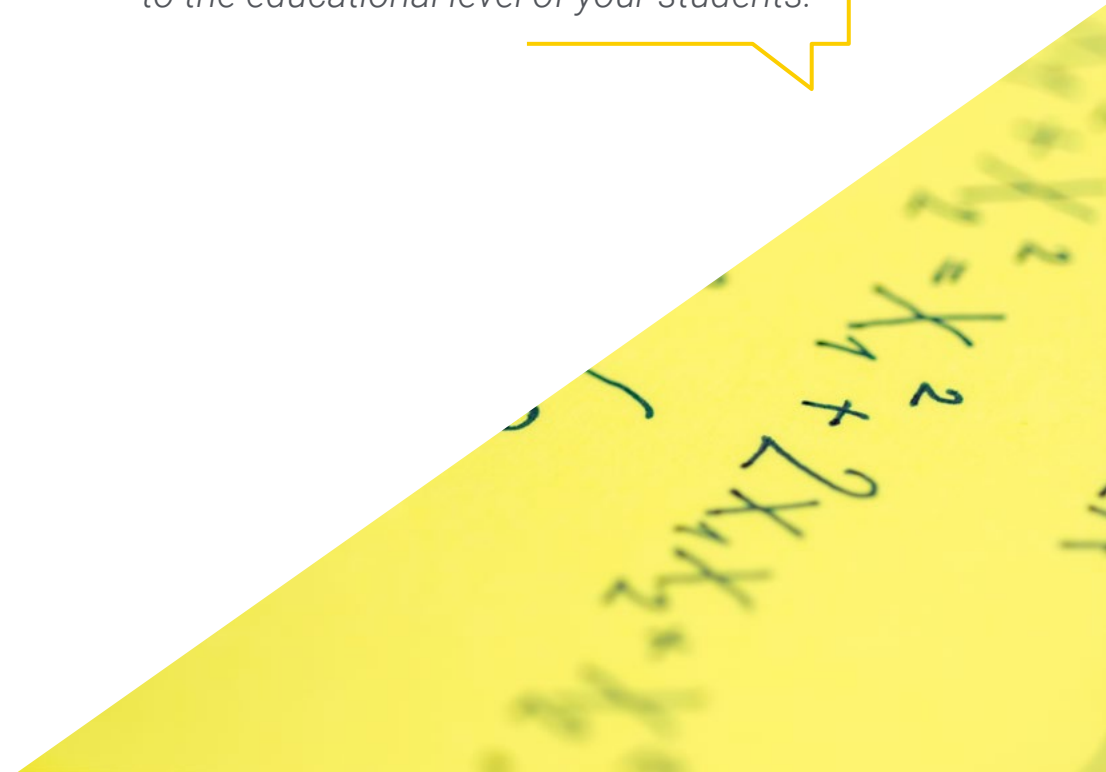
The program's teaching staff includes professionals from the sector who contribute their work experience to this program, in addition to renowned specialists from leading societies and prestigious universities.

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.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

Case studies provided by the excellent teaching team will guide you to successfully design your mathematics didactic units.

This Postgraduate Certificate will give you a plus to your teaching work by applying the most innovative didactics according to the educational level of your students.

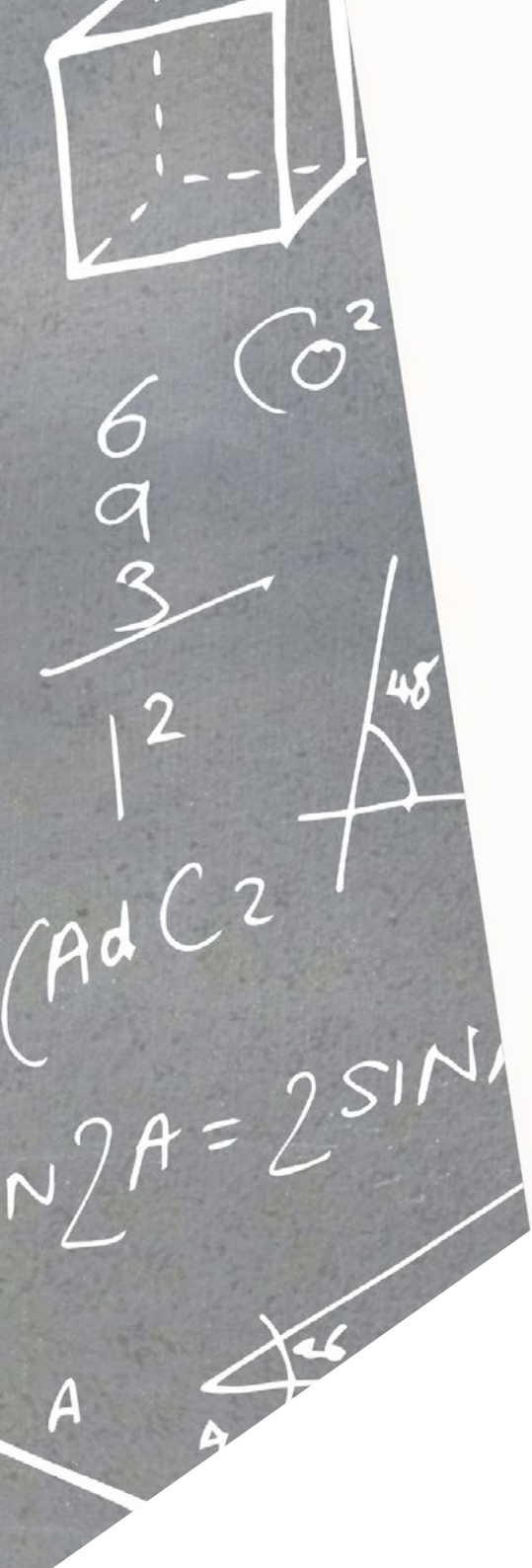


02

Objectives

TECH has designed this Postgraduate Certificate to facilitate the work of the mathematics teacher through the latest didactics. To facilitate this work, this institution provides an advanced syllabus that goes into the learning of the subject from the first moment, depending on the characteristics of the students and the processes and methods to be used at each educational level. In this way, teachers will be able to successfully carry out their role in the classroom.





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After 375 teaching hours you will be able to carry out didactic units of mathematics for students with ADHD, ASD or SEN”

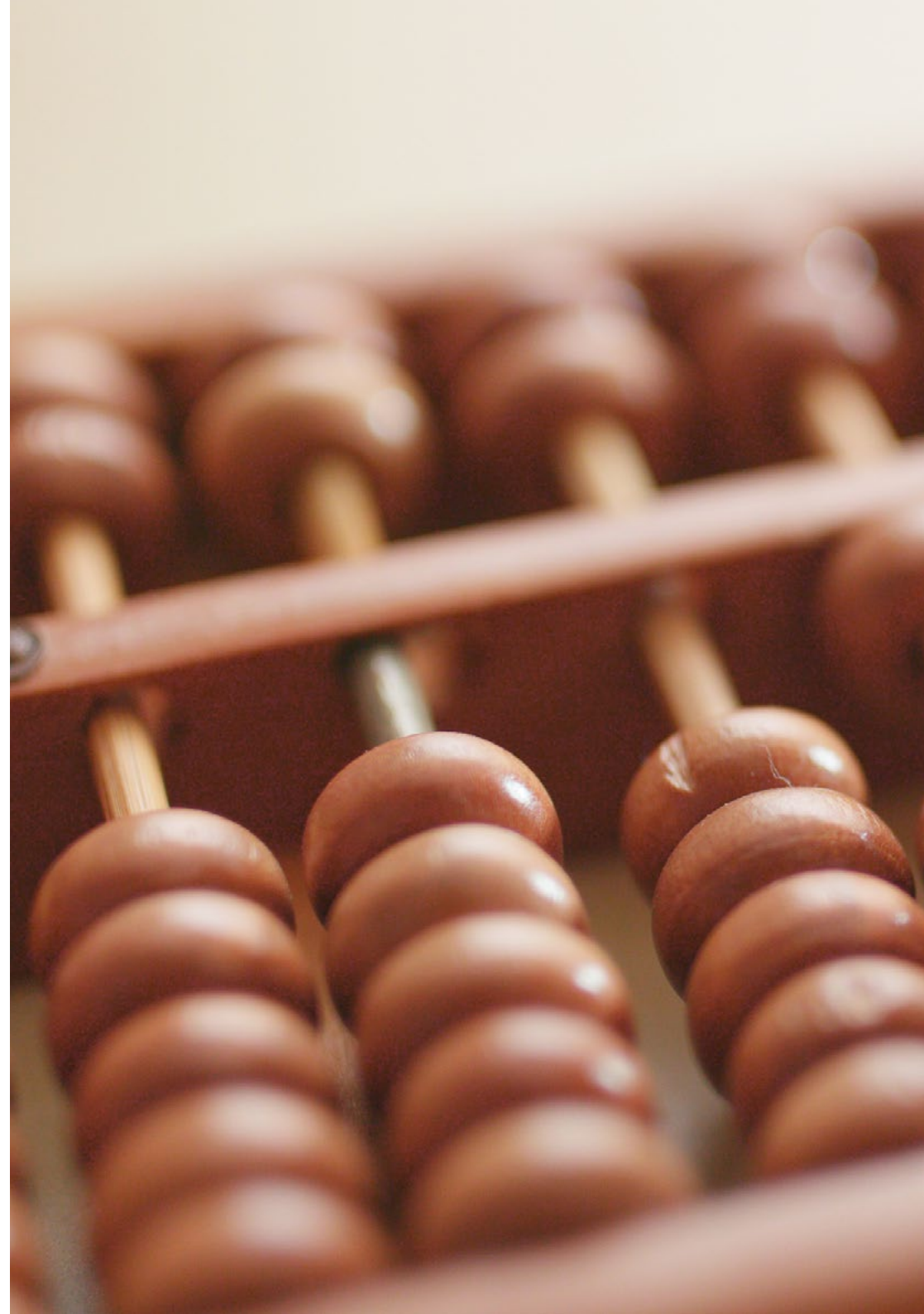


General Objectives

- 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



You have access to first class teaching resources 24 hours a day, from a computer with an internet connection”





Specific Objectives

- ◆ Discover the role of learning
- ◆ Introduce mathematical language
- ◆ Understand the development of intelligence and mathematics
- ◆ Know the relationship between high abilities and giftedness and mathematics
- ◆ Classify the neural foundations of mathematics
- ◆ Identify the neural adjacent processes of mathematics
- ◆ Establish the emotional development of the adolescent
- ◆ Understand emotional intelligence applied to adolescents
- ◆ Discover adolescent mathematical development
- ◆ Learn about adolescent mathematical thinking
- ◆ Know what adolescents and students in the classroom are like
- ◆ Gain an understanding of the current educational system , specifically in relation to mathematics
- ◆ Learning to select the factors that comprise a mathematics teaching unit
- ◆ Learn how to create the necessary documentation to work with the students in the mathematics teaching unit
- ◆ Know how to choose the most appropriate learning methodology for the subject and students in order to deliver a mathematics teaching unit
- ◆ Learn how to create the necessary documentation to work with the students in the mathematics teaching unit
- ◆ Know how to create the necessary documentation to assess students upon completion of the mathematics teaching unit
- ◆ To know how to use self-assessment and co-assessment to assess a mathematics teaching unit
- ◆ Know how to use self-assessment and co-assessment to assess a mathematics teaching unit

03

Course Management

TECH carries out a selection of process of each and every one of the teachers who make up the programs. In this way, students taking this program will have access to the most important and current information on the Didactics of Mathematics in Secondary Education. Likewise, thanks to the proximity of the faculty will be able to resolve any doubts that may arise during the 375- hours this Postgraduate Certificate.





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Solve any doubts you may have about this program with the best team of teachers specialized in the most innovative methodologies”

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

- ♦ 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 includes a 6-week academic itinerary that will lead the teacher to delve into the main theories and studies focused on Mathematics Learning. In addition, thanks to the pedagogical resources offered by TECH, you will be able to delve into the planning and creation of a didactic unit with all the elements that make it up. Also, thanks to the *Relearning* method, you will be able to reduce the hours of study and memorization.



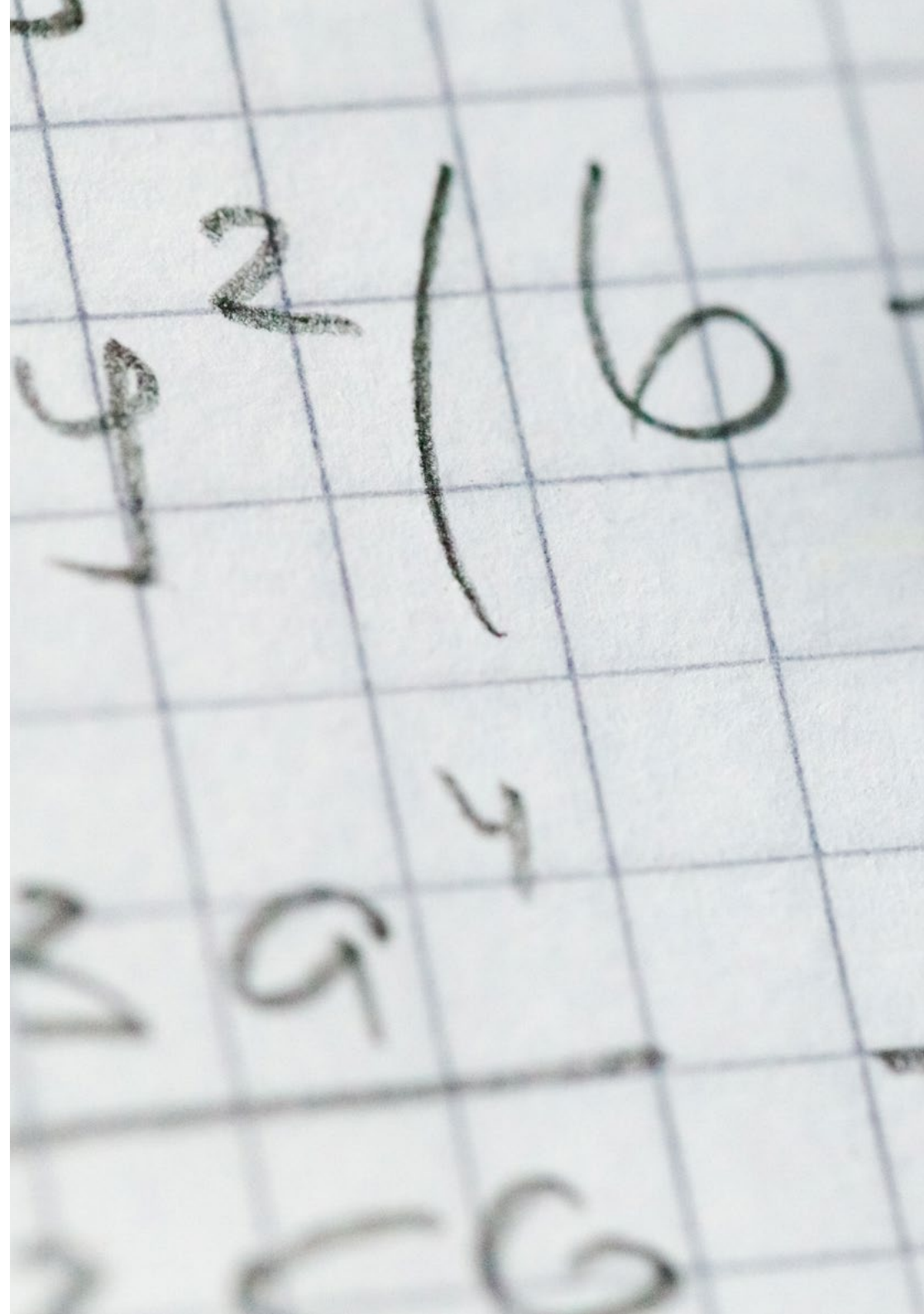


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This advanced syllabus will allow you to improve your students' Mathematics Learning by properly orienting your Didactics”

Module 1. Learning Mathematics in High School

- 1.1. Defining Learning
 - 1.1.1. The Role of Learning
 - 1.1.2. Types of Learning
- 1.2. Learning Mathematics
 - 1.2.1. Differential Learning of Mathematics
 - 1.2.2. Features of Mathematics
- 1.3. Cognitive and Metacognitive Processes in Mathematics
 - 1.3.1. Cognitive Processes in Mathematics
 - 1.3.2. Metacognitive Processes in Mathematics
- 1.4. Attention and Mathematics
 - 1.4.1. Focused Attention and Mathematics Learning
 - 1.4.2. Sustained Attention and Mathematics Learning
- 1.5. Memory and Mathematics
 - 1.5.1. Short-Term Memory and Mathematics Learning
 - 1.5.2. Long-Term Memory and Mathematics Learning
- 1.6. Language and Mathematics
 - 1.6.1. Language Development and Mathematics
 - 1.6.2. Mathematical Language
- 1.7. Intelligence and Mathematics
 - 1.7.1. Development of Intelligence and Mathematics
 - 1.7.2. Relationship of High Abilities and Giftedness with Mathematics
- 1.8. Neural Bases of Mathematics Learning
 - 1.8.1. Neural Foundations of Mathematics
 - 1.8.2. Adjacent Neural Processes of Mathematics
- 1.9. Characteristics of High School Students
 - 1.9.1. Adolescent Emotional Development
 - 1.9.2. Emotional Intelligence Applied to Adolescents
- 1.10. Adolescence and Mathematics
 - 1.10.1. Adolescent Mathematical Development
 - 1.10.2. Adolescent Mathematical Thinking



Module 2. Designing a Mathematics Teaching Unit

- 2.1. What does the Design of a Mathematics Teaching Unit Entail?
 - 2.1.1. Elements of a Teaching Unit
 - 2.1.1.1. Description
 - 2.1.2. Curriculum
 - 2.1.2.1. General Objectives for the Stage
 - 2.1.2.2. General Objectives for the Subject
 - 2.1.2.2.1. Linguistic Communication Skills
 - 2.1.2.2.2. Mathematical Skills and Core Skills in Science and Technology
 - 2.1.2.2.3. Digital Competence
 - 2.1.2.2.4. Learning to Learn
 - 2.1.2.2.5. Social and Civic Competences
 - 2.1.2.2.6. Sense of Initiative and Entrepreneurship
 - 2.1.2.2.7. Cultural Awareness and Expressions
 - 2.1.3. Contents
 - 2.1.3.1. Minimum Contents
 - 2.1.3.2. Cross-cutting Contents
 - 2.1.3.3. Interdisciplinary Contents
 - 2.1.4. Methodology
 - 2.1.4.1. Sequence of Activities
 - 2.1.4.2. Material Resources
 - 2.1.4.3. Organization of Space and Timing
 - 2.1.4.4. Attention to Diversity
 - 2.1.5. Assessment
 - 2.1.5.1. Assessment Criteria
 - 2.1.5.2. Assessable Learning Standards
 - 2.1.5.3. Teaching Methodology
 - 2.1.5.4. Competencies
- 2.2. Introduction of the Mathematics Teaching Unit
 - 2.2.1. Early Childhood
 - 2.2.2. General Objectives for the Stage
 - 2.2.3. General Objectives for the Subject
 - 2.2.4. Key Competencies
 - 2.2.5. Cross-cutting Elements

- 2.3. Recipients of the Mathematics Teaching Unit
 - 2.3.1. Students with Special Educational Needs (SEN)
 - 2.3.1.1. Definition of Children with SEN
 - 2.3.1.2. Definition of Students with SEND (Special Educational Needs and Disabilities)
 - 2.3.2. Students with High Abilities
 - 2.3.2.1. The School
 - 2.3.2.2. The Role of the Teacher in the Classroom
 - 2.3.3. Students with Attention Deficit Hyperactivity Disorder (ADHD)
 - 2.3.3.1. In School
 - 2.3.3.2. The Role of the Teacher in the Classroom
 - 2.3.4. Students with Autism Spectrum Disorder (ASD)
 - 2.3.4.1. Features
 - 2.3.4.2. The Role of the Teacher in the Classroom
 - 2.3.5. Students with Learning Difficulties
 - 2.3.5.1. Dyslexia
 - 2.3.5.2. Dysgraphia
 - 2.3.5.3. Dyscalculia
- 2.4. Choice of Methodology for the Delivery of the Teaching Unit
 - 2.4.1. Gamification in Mathematics
 - 2.4.2. The Portfolio Applied to Mathematics
 - 2.4.3. The Learning Landscape Applied to Mathematics
 - 2.4.4. Problem-Based Learning (PBL) in Mathematics
 - 2.4.5. Cooperative Learning in Mathematics
 - 2.4.6. Comprehension Projects Applied to Mathematics
 - 2.4.7. Metacognitive Learning and Mathematics
 - 2.4.8. *Flipped Classroom* Applied to Mathematics
 - 2.4.9. Conceptual Jigsaw Puzzles applied to Mathematics
 - 2.4.10. Digital Murals Applied to Mathematics
- 2.5. Selection of the Work Topic for the Mathematics Teaching Unit
 - 2.5.1. Mathematics: -1 and 2 ESO
 - 2.5.1.1. Mathematical Processes, Methods and Attitudes
 - 2.5.1.2. Numbers and Algebra
 - 2.5.1.3. Geometry
 - 2.5.1.4. Functions
 - 2.5.1.5. Statistics and Probability
 - 2.5.2. Mathematics Aimed at Year: School Students 3 ESO
 - 2.5.2.1. Mathematical Processes, Methods and Attitudes
 - 2.5.2.2. Numbers and Algebra
 - 2.5.2.3. Geometry
 - 2.5.2.4. Functions
 - 2.5.2.5. Statistics and Probability
 - 2.5.3. Mathematics Aimed at Year: School Students 4 ESO
 - 2.5.3.1. Mathematical Processes, Methods and Attitudes
 - 2.5.3.2. Numbers and Algebra
 - 2.5.3.3. Geometry
 - 2.5.3.4. Functions
 - 2.5.3.5. Statistics and Probability
 - 2.5.4. Mathematics Aimed at Year: School Students 3 ESO
 - 2.5.4.1. Mathematical Processes, Methods and Attitudes
 - 2.5.4.2. Numbers and Algebra
 - 2.5.4.3. Geometry
 - 2.5.4.4. Functions
 - 2.5.4.5. Statistics and Probability
 - 2.5.5. Mathematics Aimed at Year: School Students 4 ESO
 - 2.5.5.1. Mathematical Processes, Methods and Attitudes
 - 2.5.5.2. Numbers and Algebra
 - 2.5.5.3. Geometry
 - 2.5.5.4. Functions
 - 2.5.5.5. Statistics and Probability
 - 2.5.6. Mathematics I: 1 High School
 - 2.5.6.1. Mathematical Processes, Methods and Attitudes
 - 2.5.6.2. Numbers and Algebra
 - 2.5.6.3. Analysis
 - 2.5.6.4. Geometry
 - 2.5.6.5. Statistics and Probability

- 2.5.7. Mathematics II: 2 High School
 - 2.5.7.1. Mathematical Processes, Methods and Attitudes
 - 2.5.7.2. Numbers and Algebra
 - 2.5.7.3. Analysis
 - 2.5.7.4. Geometry
 - 2.5.7.5. Statistics and Probability
- 2.5.8. Mathematics Applied to Social Sciences: 1 High School
 - 2.5.8.1. Mathematical Processes, Methods and Attitudes
 - 2.5.8.2. Numbers and Algebra
 - 2.5.8.3. Analysis
 - 2.5.8.4. Statistics and Probability
- 2.5.9. Mathematics Applied to Social Sciences: 2 High School
 - 2.5.9.1. Mathematical Processes, Methods and Attitudes
 - 2.5.9.2. Numbers and Algebra
 - 2.5.9.3. Analysis
 - 2.5.9.4. Statistics and Probability
- 2.6. Creation of the Mathematics Teaching Unit
 - 2.6.1. Elements of a Teaching Unit
 - 2.6.1.1. Description
 - 2.6.1.2. Curriculum
 - 2.6.1.2.1. General Objectives for the Stage
 - 2.6.1.2.2. General Objectives for the Subject
 - 2.6.1.2.3. Key Competencies
 - 2.6.1.3. Contents
 - 2.6.1.4. Methodology
 - 2.6.1.5. Sequence of Activities
 - 2.6.1.6. Material Resources
 - 2.6.1.7. Organization of Space and Timing
 - 2.6.1.8. Attention to Diversity
 - 2.6.1.9. Assessment
- 2.7. Introduction of the Mathematics Teaching Unit
 - 2.7.1. The Cover
 - 2.7.2. The Index
 - 2.7.3. Previous Knowledge
 - 2.7.4. Themes
- 2.8. Classroom Application of the Mathematics Teaching Unit
 - 2.8.1. Documentation Delivery
 - 2.8.2. Creation of Cooperative Groups
 - 2.8.3. Cooperative Theoretical Work
 - 2.8.4. Synthesis Activity: Digital Mural
 - 2.8.5. Presentation of the Digital Mural
- 2.9. Assessment of a Mathematics Teaching Unit
 - 2.9.1. Competency-Based Evaluation imperative
 - 2.9.2. Assessment and Grade
 - 2.9.3. Assessment of the Teaching Unit
 - 2.9.4. Student Assessment
 - 2.9.5. Assessment of the Teaching Unit
 - 2.9.6. Grade



With this program you will delve into the neural basis of Mathematics Learning under the highest scientific rigor”

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.





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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.

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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 Didactics of Mathematics in High School guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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

This **Postgraduate Certificate in Didactics of Mathematics in High School** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Didactics of Mathematics in High School**

Official N° of Hours: **375 h.**



*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



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in High School

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Postgraduate Certificate Didactics of Mathematics in High School

