

# Postgraduate Certificate Teaching Mathematics in Pre-School Education





## Postgraduate Certificate Teaching Mathematics in Pre-School Education

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/education/postgraduate-certificate/teaching-mathematics-pre-school-education](http://www.techtute.com/us/education/postgraduate-certificate/teaching-mathematics-pre-school-education)

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# 01

# Introduction

To teach mathematics lessons in Pre-School Education, it is necessary to take into account the main problems that the student will face at that stage, in order to use the most appropriate methodology for each situation. This high-quality program focuses on the Teaching of Mathematics in this educational period, in order to specialize in this field to achieve the maximum possible educational benefits.





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*Learning mathematics can be an arduous task at any educational stage, so it is important to acquire a good foundation from early childhood”*

Knowing the specific didactics of mathematics in Pre-School Education is essential for teachers who teach these lessons to the youngest children, since it is in this educational stage where the youngest children can acquire good educational foundations.

In this sense, teachers must also become researchers of their own work, designing their own educational scenarios and materials, in order to make them more effective for children's learning.

TECH Technological University has proposed to facilitate this task and, for this, has designed this fantastic program in which you will find all the information you need on this subject, with a fully up-to-date content and that aims to enable them to achieve professional success in the field of teaching.

This specialization is distinguished by the fact that it can be taken in a 100% online format, adapting to the needs and obligations of students, asynchronously and completely self-manageable. Students will be able to choose which days, at what time and how much time to dedicate to the study of the contents of the program, always in tune with the abilities and aptitudes dedicated to it.

The order and distribution of the subjects and their units is specially designed to allow each student to choose their own schedule and self-manage their time. For this purpose, you will have at your disposal theoretical materials presented through enriched texts, multimedia presentations, exercises and guided practical activities, motivational videos, master classes and case studies, where you will be able to evoke knowledge in an orderly manner and work on decision making that demonstrates your high-level education within this field of teaching.

A higher-level program aimed at those students who wish to surround themselves with the best and compete to excel in their profession, not only as a personal matter, but also with the main objective of wanting to make a difference in the education of their students.

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

- ♦ The development of practical cases presented in simulated scenarios by experts in the field of study, where the student will evoke in an orderly manner the knowledge learned and demonstrate the acquisition of the competencies
- ♦ 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
- ♦ The latest news on the educational task of the pre-school education teacher
- ♦ Practical exercises where the students undergo the self-assessment process to improve learning, as well as activities at different skill levels
- ♦ Special emphasis on innovative methodologies and teaching research
- ♦ 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



*Improving teachers' skills is essential to offer students quality education"*



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*Immerse yourself in the study of this complete program, in which you will find everything you need to acquire a higher professional level and compete with the best"*

Its teaching staff includes professionals belonging to the field of teacher training, who bring to this training their work experience, as well as recognized specialists from prestigious reference societies and universities.

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

The design of this program focuses on Problem-Based Learning, by means of which teachers must try to solve the different professional practice situations that are presented to them throughout the program. For this purpose, they will be assisted by an innovative interactive video system developed by renowned experts in the field of personalized learning in pre-School education, with extensive teaching experience.

*We offer you the best teaching methodology with a multitude of practical cases so that you can develop your study as if you were facing real cases.*

*The program invites us to learn and grow, to develop as teachers, to learn about educational tools and strategies in relation to the most common needs in our classrooms.*



02

# Objectives

The Postgraduate Certificate in Teaching Mathematics in Pre-School Education is oriented to develop in students the skills required for the exercise of their profession. For this, TECH Technological University offers the most complete specialization from the hand of leading experts in the field.







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*Become a Pre-School teacher thanks to the opportunity offered by TECH, the world's largest online university"*



### General Objective

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- To develop in teachers the necessary competences to teach their lessons at the Pre-School Education stage in compliance with the educational objectives foreseen and focused on Mathematics Teaching

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*Our goal is to achieve academic excellence and to help you achieve it too”*





## Specific Objectives

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- ♦ Knowing the different perspectives on mathematics learning in the early years of the child
- ♦ Design successful teaching activities in the classroom
- ♦ Train teachers in the construction of mathematical contents
- ♦ Get to know the relevant aspects of the mathematics syllabus
- ♦ Identify real classroom situations on the subject matter
- ♦ Turn teachers into researchers of their own action, providing them with enough clues to be able to design their own scenarios and their own materials
- ♦ Discover the main currents of mathematics teaching used not only today but throughout the history of mathematics didactics, focusing on a stage where the formality of mathematics teaching has sometimes been taken away and yet its enormous power has been demonstrated
- ♦ Know how to identify and expose the resolution of problems in class
- ♦ Identify the different problem-solving methods
- ♦ Monitor mathematical learning to be applied in Pre-School Education
- ♦ Establish various assessment programs

03

# Structure and Content

The structure of the contents has been designed by top level professionals within the educational field, with a wide trajectory and recognized prestige in the profession, endorsed by their experience, and with a wide command of the new technologies applied to teaching.





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*The best content to create  
the best teachers”*



## Module 1. Development of Mathematical Thinking in Pre-School Education

- 1.1. Children and the Learning of Mathematics
  - 1.1.1. Characteristics of Logic Thinking
  - 1.1.2. The Environment as a Source of Learning: Senses and Play
  - 1.1.3. Errors and Obstacles in Learning
- 1.2. Construction of Mathematical Contents in Pre-School Education
  - 1.2.1. Learning Models vs. Teaching Models
  - 1.2.2. Research in the Field
  - 1.2.3. Didactic Transposition
- 1.3. The Mathematics Syllabus as a Globalizing Element
  - 1.3.1. NCTM Considerations
  - 1.3.2. General Considerations for the Organization of Contents
- 1.4. Theory of Didactic Situations
  - 1.4.1. Didactic Contract
  - 1.4.2. Situation-Based Learning
  - 1.4.3. Analysis of Real Situations
- 1.5. Logical Activity
  - 1.5.1. What is Logical Thinking?
  - 1.5.2. And Before the Number, What?: Classify, Serialize and Enumerate
- 1.6. Initiation to Number
  - 1.6.1. Concepts
  - 1.6.2. Numerical Development: Counting
  - 1.6.3. Fundamental Cardinal and Ordinal Situations
  - 1.6.4. The Importance of Zero
- 1.7. Initiation to Operations
  - 1.7.1. Additive Structure
  - 1.7.2. Strategies to Add
  - 1.7.3. Initiation to Subtraction
- 1.8. Space and Geometry in Pre-school Education
  - 1.8.1. Psychopedagogical Considerations. Van Hiele Model
  - 1.8.2. Geometry Types
  - 1.8.3. Visualization and Reasoning

- 1.9. Magnitudes and their Measurement
  - 1.9.1. Construction of Magnitude in the Child
  - 1.9.2. Measuring Magnitudes
- 1.10. Discovery Learning and ICT
  - 1.10.1. Introduction and Objectives
  - 1.10.2. ICT Discovery and Research
  - 1.10.3. The Development of Productive Learning: Critical Thinking
  - 1.10.4. Webquest: Guided Learning with ICT and the Internet
  - 1.10.5. Types of Webquest
  - 1.10.6. Strategies and Structure of Webquest
  - 1.10.7. Tools for Webquest Creation: Google Sites

## Module 2. Teaching Mathematics in Pre-School Education

- 2.1. Review of Theories and Terms
  - 2.1.1. Theory of Didactical Situations
  - 2.1.2. Logical Activity: Meanings
- 2.2. Problem-Solving
  - 2.2.1. What is a Problem?
  - 2.2.2. How to Pose Problems in Pre-School Education
- 2.3. The Role of Representation
  - 2.3.1. Symbols
  - 2.3.2. Representation as the Identity of Mathematical Activity
- 2.4. Globalized Education
  - 2.4.1. Cooperative Learning
  - 2.4.2. Project Method
  - 2.4.3. Play as a Source of Learning
- 2.5. Building Materials
  - 2.5.1. Material for Teaching Purposes
  - 2.5.2. Constructing Your Own Materials
- 2.6. The Classroom as a Space for Learning
  - 2.6.1. Decoration as a Learning Element
  - 2.6.2. The Math Corner



- 2.7. Mathematics as a Cross-Cutting Subject
  - 2.7.1. Waldorf
  - 2.7.2. Montessori
  - 2.7.3. Reggio Emil
  - 2.7.4. Singapore Method
  - 2.7.5. Singapore Methodology
  - 2.7.6. ABN
- 2.8. ICT in Pre-school Education
  - 2.8.1. Devices and Software
  - 2.8.2. Calculator
- 2.9. Evaluation as an Improvement Element
  - 2.9.1. Learning Evaluation
  - 2.9.2. Process Evaluation
- 2.10. Learning and Mathematics. The Construction of Mathematical Knowledge in Pre-School
  - 2.10.1. Specificity and Significance of Mathematical Knowledge in Learning
  - 2.10.2. Learning Mathematics
  - 2.10.3. A Model of Constructivist Learning in Mathematics
  - 2.10.4. Learning and Management of Didactic Variables

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*This program is the key to advancing your professional career, don't let this opportunity pass you by"*

04

# 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.





05

# Certificate

The Postgraduate Certificate in Teaching Mathematics in Pre-School Education 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 Teaching Mathematics in Pre-School Education** 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 Teaching Mathematics in Pre-School Education**  
Official N° of hours: **300 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.

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



Postgraduate Certificate  
Teaching Mathematics  
in Pre-School Education

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online



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