

# Professional Master's Degree

## Mathematics Teacher Training in High School Education





## Professional Master's Degree Mathematics Teacher Training in High School Education

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

Website: [www.techtitute.com/us/education/professional-master-degree/master-mathematics-teacher-training-high-school-education](http://www.techtitute.com/us/education/professional-master-degree/master-mathematics-teacher-training-high-school-education)

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# 01

# Introduction

High School Teaching is crucial to prepare young people for the future and contribute to the creation of a knowledge-based society. This program gathers specific information to update teachers in the teaching of Mathematics. Don't think twice and join the best online university on the current scene.





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*This program makes professionals in this field increase their ability to succeed, which results in better practice and performance that will have a direct impact on educational treatment in the classroom”*

The Mathematics Teacher Training in High School Education program is designed to improve the student's competencies as a future teacher through the most innovative educational technology and on a hybrid learning basis.

This qualification is distinguished by the fact that its contents can be taken 100% online, adapting to the needs and obligations of the student, in an asynchronous and completely self-manageable manner. The student will be able to choose which days, at what time and for how long to dedicate to the course of the contents of the program. Always in tune with the skills and capabilities 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.

This **Professional Master's Degree in Mathematics Teacher Training in High 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 scenarios in simulated scenarios by experts in each area of study, where the student will effectively put their learning into practice and demonstrate skills acquisition
- ♦ 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 developments on the educational task of the high school teacher
- ♦ Practical exercises where to perform the self-assessment process to improve learning, as well as activities at different levels of competence, according to Miller's model
- ♦ 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



*TECH presents the Professional Master's Degree in Mathematics Teacher Training in High School Education with the highest quality in the university educational panorama"*

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*This 100% online Professional Master's Degree will allow you to balance your studies with your professional work while increasing your knowledge in this field”*

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

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive learning programmed to study 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 throughout the program. For this purpose, the teacher will be assisted by an innovative interactive video system developed by recognized experts in the field of Mathematics Teaching and with great teaching experience.

*Increase your decision-making confidence by updating your knowledge through this Professional Master's Degree.*

*Update your knowledge of the subject from professionals with years of teaching experience.*



02

# Objectives

The program in Mathematics Teacher Training in High School Education is oriented to facilitate the performance of the professional dedicated to teaching with the latest advances and the most innovative treatments in the sector.







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*Thanks to this program, you will be able to achieve the necessary skills to be a successful professional”*



### General Objective

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- Provide the future teacher with the acquisition of specialized skills and competencies that will increase their performance level and update their knowledge in High School Education teaching

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*Make the most of this opportunity to learn about advances in education and apply the latest teaching methods in your daily practice”*





## Specific Objectives

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### Module 1. Learning and Development of Personality

- ◆ Get to know the relationship between learning and development, education and culture
- ◆ Understand the importance of schooling in development
- ◆ Study the concept of brain plasticity and plasticity windows
- ◆ Gain knowledge about the essential social factors in learning: imitation, shared attention and empathic understanding
- ◆ Identify the stages of development
- ◆ Understand the concept of personality

### Module 2. Society, Family and Education

- ◆ Know the term integral education
- ◆ Conceptualize educational guidance
- ◆ Explain the origin of educational guidance and the main figures of educational guidance
- ◆ Explain the areas of intervention of educational guidance
- ◆ Identify the models of intervention of educational guidance
- ◆ Enumerate the functions of guidance in the educational center
- ◆ Enunciate the principles of the guidance action

### Module 3. Complements for the Disciplinary Training of Mathematics

- ◆ Establish the cultural importance of mathematics throughout history
- ◆ Delve into the conceptual contents of mathematics for the formation of the students of High School Education
- ◆ Get to know the relation of history as a teaching principle
- ◆ Determine the teaching principles that can be derived from history in relation to mathematics

#### **Module 4. Mathematics Syllabus Design**

- ♦ Define the concept of syllabus
- ♦ Detail the elements that make up the syllabus
- ♦ Explain the concept of syllabus design
- ♦ Describe the levels of concreteness of the syllabus
- ♦ Explain the different models of the syllabus
- ♦ Determine the aspects that should be taken into account in the elaboration of a teaching program

#### **Module 5. Teaching Methods of Mathematics**

- ♦ Expose the most relevant learning theories in the world of education and the main authors related to them
- ♦ Differentiate these theories and know their main characteristics
- ♦ Talk about behaviorism, cognitivism and constructivism
- ♦ Expose the concepts of classical conditioning and operant conditioning and their relationship in learning theories
- ♦ Explain what learning for the digital era and the theory of connectivism consist of
- ♦ Gain knowledge about the social theories of learning, their principles and their relation with digital learning
- ♦ Explain the concept of implicit theories and link them to the educational field

#### **Module 6. Teaching Innovation and Initiation to Educational Research**

- ♦ Get to know the fields of innovation in the educational context
- ♦ Discover learning communities
- ♦ Expose the obstacles and challenges of innovation in the educational context
- ♦ Explain how teachers learn and their role change
- ♦ Demonstrate the factors that favor professional learning and development
- ♦ Delve into the professional learning of teachers
- ♦ Introduce professional learning and meeting spaces, such as: conferences, congresses, innovation days, professional networks, communities of practice and MOOCS (Massive Open Online Courses)

#### **Module 7. Inclusive Education and Attention to Diversity**

- ♦ Develop an overview of the conceptions and formation of the teacher profile throughout history
- ♦ Learn about the institutions and training plans of each moment
- ♦ Conceptualize the current profile of teachers and their training needs



### **Module 8. Creativity and Emotional Education in the Classroom**

- ♦ Know the difference between emotion and intelligence
- ♦ Understand emotional intelligence and its importance in the individual
- ♦ Get to know the importance of a teacher with very good self-regulation and emotional intelligence, from the point of view of Mayer and Salovey

### **Module 9. Neuroeducation**

- ♦ Understand experience at the neural level
- ♦ Discover learning at the neuronal level

### **Module 10. Communication in the Classroom**

- ♦ Communicate effectively with all members of the classroom
- ♦ Use images and videos as support material in the classroom
- ♦ Know how to solve communication problems

# 03 Skills

After passing the assessments of the Professional Master's Degree in Mathematics Teacher Training in High School Education, the professional will have acquired the necessary skills for a quality and up-to-date practice based on the most innovative teaching methodology.





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*This program will allow you to learn the new tools used in Teacher Training to offer better service to your students”*

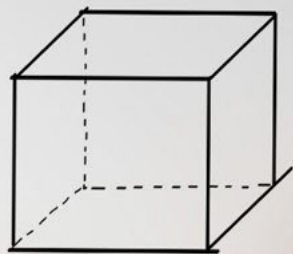


## General Skills

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- ♦ Gain knowledge about the syllabus contents of the subjects related to the corresponding teaching specialization, as well as the body of didactic knowledge regarding the respective teaching and learning processes. For professional training, knowledge of the respective professions will be included.
- ♦ Plan, develop and evaluate the teaching and learning process, promoting educational processes that facilitate the acquisition of the competencies of the respective teachings, taking into account the level and previous training of the students, as well as the orientation of the students, both individually and in collaboration with other teachers and professionals of the center.
- ♦ Search, obtain, process and communicate information (oral, printed, audiovisual, digital or multimedia), transform it into knowledge and apply it in the processes of teaching and learning in their own subjects.
- ♦ Determine the syllabus to be implemented in an educational center by participating in its collective planning; develop and apply teaching methodologies, both group and personalized, adapted to the diversity of the students.
- ♦ Design and develop learning spaces with special attention to equity, emotional and values education, equal rights and opportunities between men and women, citizenship training and respect for human rights that facilitate life in society, decision-making and the construction of a sustainable future.
- ♦ Acquire strategies to stimulate student effort and promote their ability to learn by themselves and with others, and develop thinking and decision-making skills that facilitate autonomy, confidence and personal initiative.
- ♦ Gain knowledge about the processes of interaction and communication in the classroom, master the social skills and abilities necessary to promote learning and coexistence in the classroom, and deal with problems that may arise in the classroom.
- ♦ Design and carry out formal and non-formal activities that contribute to make the center a place of participation and culture in the environment where it is located; develop the functions of tutoring and guidance of students in a collaborative and coordinated manner; participate in the evaluation, research and innovation of teaching and learning processes.
- ♦ Get to know the regulations and institutional organization of the educational system and quality improvement models applicable to educational centers.
- ♦ Know and analyze the historical characteristics of the teaching profession, its current situation, perspectives and interrelation with the social reality of each era.
- ♦ Inform and advise families about the teaching and learning process and about the personal, educational and professional orientation of their children.



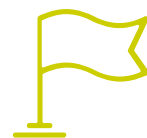


$$\frac{65}{12}q = (1A + \frac{4}{8})$$

$$\frac{3}{4} = p(48 + 13)$$

$$q\frac{65}{p} = \frac{3}{4} \left( \frac{p}{65} - \right)$$

$$\frac{3}{4} = p(48 + 1)$$



### Specific Skills

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- ♦ Get to know the characteristics of the students, their social contexts and motivations
- ♦ Understand the personality development of these students and the possible dysfunctions that affect learning
- ♦ Elaborate proposals based on the acquisition of knowledge, skills and intellectual and emotional skills
- ♦ Identify and plan for the resolution of educational situations that affect students with different abilities and learning rhythms
- ♦ Know the processes of interaction and communication in the classroom and in the center, address and solve possible problems
- ♦ Know the historical evolution of the educational system in our country
- ♦ Know and apply resources and strategies for information, tutoring and academic and professional orientation
- ♦ Promote actions of emotional education in value and citizenship training
- ♦ Participate in the definition of the educational project and in the general activities of the center according to criteria of quality improvement, attention to diversity, prevention of learning and coexistence problems
- ♦ Relate education to the environment and understand the educational role of the family and the community, both in the acquisition of skills and learning and in education in respect for rights and freedoms, equal rights and opportunities between men and women and in the equal treatment and non-discrimination of people with disabilities

- ♦ Get to know the historical evolution of the family, its different types and the incidence of the family context in education
  - ♦ Acquire social skills in family relations and orientation
  - ♦ Know the formative and cultural value of the subjects corresponding to the specialization and the contents that are studied in the respective teachings
  - ♦ Gain knowledge about the history and recent developments of the subjects and their perspectives in order to be able to transmit a dynamic vision of them
  - ♦ Know the contexts and situations in which the different curricular contents are used or applied
  - ♦ Gain knowledge about the processes and resources for the prevention of learning and coexistence problems, evaluation processes and academic and career guidance
  - ♦ Get to know the theoretical-practical developments of teaching and learning of the subjects corresponding to the specialization
  - ♦ Transform the syllabus into activity and work programs
  - ♦ Acquire criteria for the selection and elaboration of educational materials
  - ♦ Foster a climate that facilitates learning and values the contributions of the students
  - ♦ Integrate audiovisual communication and multimedia education in the teaching and learning process
  - ♦ Get to know evaluation strategies and techniques and to understand evaluation as an instrument of regulation and stimulus to effort
- ♦ Get to know and apply innovative teaching proposals in the area of specialization
  - ♦ Critically analyze the performance of teaching, good practices and guidance using quality indicators
  - ♦ Identify the problems related to the teaching and learning of the subjects of the specialization and propose alternatives and solutions
  - ♦ Know and apply basic methodologies and techniques of educational research and evaluation and be able to design and develop research, innovation and evaluation projects
  - ♦ Acquire experience in the planning, teaching and evaluation of the subjects corresponding to the specialization
  - ♦ Master the social skills and abilities necessary to foster a climate that facilitates learning and coexistence
  - ♦ Participate in the proposals for improvement in the different areas of performance
  - ♦ Summarize the training acquired throughout all the courses described above and demonstrate the acquisition of the competences of the other subjects
  - ♦ Demonstrate a command of the English language corresponding to level B1 according to the Common European Framework of Reference for Languages



- ♦ Get to know the psycho-pedagogical characteristics of the students in order to be able to evaluate them and issue the required reports
- ♦ Know the measures of attention to diversity that can be adopted in order to be able to give the necessary advice in each case
- ♦ Analyze the organization and functioning of a center to coordinate the personal, academic and professional orientation of students in collaboration with the members of the school community
- ♦ Develop the necessary skills and techniques to be able to adequately advise families about the development and learning process of their children
- ♦ Identify public services and community entities with which the center can collaborate and promote and plan, in collaboration with the management team, the necessary actions for a better attention of the students

04

# Course Management

The program includes in its teaching staff experts of reference in Teacher Training, who bring to this program their work experience. Additionally, other recognized experts participate in its design and preparation, completing the program in an interdisciplinary manner.





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*Learn about the latest advances in Teacher Training from leading experts in the field”*

## Management



### Dr. Barboyón Combey, Laura

- ♦ Teacher of Primary Education and postgraduate studies
- ♦ Teacher in postgraduate university studies of High School Teacher Formation
- ♦ Teacher of Primary Education in several schools
- ♦ Doctor in Education from the University of Valencia
- ♦ Master's Degree in Psychopedagogy from the University of Valencia
- ♦ Degree in Primary Education with a major in English Teaching from the Catholic University of Valencia San Vicente Mártir



# 05

# Structure and Content

The structure of the contents has been designed by the best professionals in the Teacher Training sector, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed and studied, and with extensive knowledge of new technologies applied to teaching.







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*We offer you the most complete and up-to-date educational program on the market. We strive for excellence and for you to achieve it too"*

## Module 1. Learning and Development of Personality

- 1.1. Introduction: Relationship between Learning and Development, Education and Culture
  - 1.1.1. Introduction
  - 1.1.2. The Common Concept of Psychological Development
  - 1.1.3. An Alternative to the Common Concept of Psychological Development: the Social and Cultural Nature of Development
  - 1.1.4. The Role of Education in Psychological Development
  - 1.1.5. Schooling as an Essential Context for Psychological Development
  - 1.1.6. Essential Social Factors in Learning
  - 1.1.7. Stages of Development
  - 1.1.8. Key Developmental Processes
- 1.2. Conceptions of Learning and Learner Development
  - 1.2.1. Concept of Learning
  - 1.2.2. Main Theories of Learning and Development
    - 1.2.2.1. Theories of Psychoanalysis
    - 1.2.2.2. Freud's Theory
    - 1.2.2.3. Erikson's Psychosocial Theory
  - 1.2.3. Behaviorist Theories
    - 1.2.3.1. Pavlov's Classical Conditioning Theory
    - 1.2.3.2. Skinner's Operant Conditioning Theory. Cognitive Theories
    - 1.2.3.3. Information Processing Theory
      - 1.2.3.3.1. Robert Gagné's Instructional Theory
      - 1.2.3.3.2. Constructivism
      - 1.2.3.3.3. Verbal-Meaningful Learning Theory of David Ausubel
      - 1.2.3.3.4. Jean Piaget's Genetic Epistemology
      - 1.2.3.3.5. Lev Vygotsky's Sociocultural Cognitive Theory
      - 1.2.3.3.6. Jerome Bruner's Discovery Learning
      - 1.2.3.3.7. Socio-Cognitive Theories
      - 1.2.3.3.8. Bandura's social-Cognitive Theory
- 1.3. Characterization of the Adolescence Stage: Physical and Sexual Development
  - 1.3.1. Puberty and Adolescence
    - 1.3.1.1. Puberty
    - 1.3.1.2. Adolescence
  - 1.3.2. Psychological Effects of Puberty
  - 1.3.3. Early Developing Adolescents and Late Developing Adolescents
    - 1.3.3.1. Precocious Puberty
    - 1.3.3.2. Delay of Puberty
  - 1.3.4. Changing Patterns of Sexual Behavior
  - 1.3.5. The Context and Timing of Adolescent Sexual Behavior
  - 1.3.6. Love Affair and Intimacy
- 1.4. Psychological Dimensions related to School Learning: Social and Moral Development
  - 1.4.1. Main Socializing Agents
    - 1.4.1.1. The Family
      - 1.4.1.1.1. The Concept of Family
      - 1.4.1.1.2. The Adolescent and their Family
    - 1.4.1.2. The Peer Group
    - 1.4.1.3. Educational Centers
    - 1.4.1.4. The Media
  - 1.4.2. Risks of Social Media
  - 1.4.3. Development of Moral Concepts. Various Theoretical Models
    - 1.4.3.1. Piaget
    - 1.4.3.2. Kohlberg
  - 1.4.4. Factors Influencing Adolescent Moral Development
    - 1.4.4.1. Differences Between Genders
    - 1.4.4.2. Intelligence
    - 1.4.4.3. At Home
    - 1.4.4.4. Friends



- 1.5. Psychological Dimensions Related to School Learning: Intelligence
  - 1.5.1. The Advent of Formal Thinking
    - 1.5.1.1. Characteristics of Formal Thinking
    - 1.5.1.2. Hypothetic-Deductive Thinking and Propositional Reasoning
  - 1.5.2. Criticisms to Piaget's View
  - 1.5.3. Cognitive Changes
    - 1.5.3.1. The Development of Memory
      - 1.5.3.1.1. Sensory Memory
      - 1.5.3.1.2. Short-Term Memory (STM)
      - 1.5.3.1.3. Long-Term Memory (LTM)
    - 1.5.3.2. The Development of Memory Strategies
    - 1.5.3.3. The Development of Metacognition
      - 1.5.3.3.1. The Development of Metacognition
      - 1.5.3.3.2. Knowledge and Metacognitive Control
  - 1.5.4. Intelligence
    - 1.5.4.1. Cattell's Fluid and Crystallized Intelligence
    - 1.5.4.2. Sternberg Triarchic Theory
    - 1.5.4.3. Gardner's Multiple Intelligences
    - 1.5.4.4. Goleman's Emotional Intelligence
    - 1.5.4.5. Wechsler Scale
- 1.6. Psychological Dimensions related to School Learning: Identity, Self-Concept, and Motivation
  - 1.6.1. Self-Concept
    - 1.6.1.1. Definition of Self-Concept
    - 1.6.1.2. Factors Associated with the Development of Self-Concept
  - 1.6.2. Self-Esteem
  - 1.6.3. Theoretical Approaches to Identity Development
    - 1.6.3.1. Different Ways of Elaborating Identity
  - 1.6.4. Motivation and Learning

- 1.7. The Teaching-Learning Process in Adolescence: General Principles
  - 1.7.1. Ausubel's Theory of Meaningful Verbal Learning
    - 1.7.1.1. Types of Learning in the School Context
    - 1.7.1.2. What is Already Known and the Desire to Learn: Conditions for Constructing Meaning
    - 1.7.1.3. The Processes of Assimilation of New Contents
    - 1.7.1.4. A Review of the Theory Thirty Years Later
  - 1.7.2. Processes of Knowledge Construction: The Constructivist Theory of Teaching and Learning
    - 1.7.2.1. School Education: A Social and Socializing Practice
    - 1.7.2.2. The Construction of Knowledge in the School Context: The Interactive Triangle
    - 1.7.2.3. The Processes of Knowledge Construction and the Mechanisms of Educational Influence
  - 1.7.3. Why Do Only Humans Have Teaching?
- 1.8. The Teaching-Learning Process in Adolescence: Knowledge Construction in the Classroom and Teacher/Student Interaction
  - 1.8.1. Teacher Effectiveness
  - 1.8.2. Teaching Styles
  - 1.8.3. Teaching Models
  - 1.8.4. The Role of the Teacher
  - 1.8.5. Expectations of the Teacher and the Student
- 1.9. The Teaching-Learning Process in Adolescence. Processes of Knowledge Construction and Peer-to-Peer Interaction
  - 1.9.1. Peer Interaction and Cognitive Development
  - 1.9.2. Cooperative Learning
    - 1.9.2.1. The Use of Cooperative Learning as a Didactic Method
- 1.10. Attention to Diversity and Educational Needs in the Adolescence Stage
  - 1.10.1. Historical Background
  - 1.10.2. The Warnock Report
  - 1.10.3. The Concept of Special Educational Needs
  - 1.10.4. The Causes of SEN
  - 1.10.5. Classification of SEN
  - 1.10.6. Learning Difficulties derived from Motor, Visual and Hearing Impairment. Educational Intervention
  - 1.10.7. Learning Difficulties derived from Autism (ASD), Attention Deficit Hyperactivity Disorder (ADHD), Intellectual Disabilities (IDD) and High Abilities. Educational Intervention
  - 1.10.8. Behavioral Disorders in Childhood and Adolescence
    - 1.10.8.1. Epidemiology and Risk Factors for Behavioral Disorders
    - 1.10.8.2. Clinical Features and Forms of Presentation
  - 1.10.9. Main Manifestations of Behavioral Disorders
    - 1.10.9.1. Attention Deficit Hyperactivity Disorder (ADHD)
    - 1.10.9.2. Dissocial Disorder (DD)
    - 1.10.9.3. Oppositional Defiant Disorder (ODD)
  - 1.10.10. An Example of an Instrument to Detect Behavioral Disorders in the Classroom
  - 1.10.11. Proposals for Therapeutic Intervention in the Classroom
    - 1.10.11.1. Attention Deficit Hyperactivity Disorder (ADHD)
    - 1.10.11.2. Oppositional Defiant Disorder (ODD) and Dissocial Disorder (DD)
- 1.11. Relationships in Adolescence and Conflict Management in the Classroom
  - 1.11.1. What is Mediation?
    - 1.11.1.1. Types of Mediation
      - 1.11.1.1.1. School Mediation
      - 1.11.1.1.2. Family Mediation
    - 1.11.1.2. Insight Theory
    - 1.11.1.3. The Enneagram
  - 1.11.2. Strengths and Weaknesses of Implementing a Mediation Program
- 1.12. Principle of Personalized Education and Forms of Action
  - 1.12.1. Historical Evolution of Special Education
    - 1.12.1.1. The United Nations (UN)
    - 1.12.1.2. The Universal Declaration of Human Rights (UDHR)
  - 1.12.2. The Localization Dilemma
  - 1.12.3. Educational Inclusion
  - 1.12.4. The Dilemma of Differences
  - 1.12.5. Personalized Education
  - 1.12.6. Personal Learning Design
  - 1.12.7. Conclusions
    - 1.12.7.1. Learning by Doing

## Module 2. Society, Family and Education

- 2.1. The Guidance Function of the Educational Center
  - 2.1.1. Educational Counselling
    - 2.1.1.1. Introduction
    - 2.1.1.2. Concept of Educational Guidance
    - 2.1.1.3. Guidance Functions in the Educational Center
    - 2.1.1.4. Origin of Educational Guidance
    - 2.1.1.5. Areas of Intervention
      - 2.1.1.5.1. Professional Guidance
      - 2.1.1.5.2. Development Guidance
      - 2.1.1.5.3. School Guidance
      - 2.1.1.5.4. Guidance in the Attention to Diversity
    - 2.1.1.6. Intervention Models
      - 2.1.1.6.1. Counseling Model
      - 2.1.1.6.2. Services Model
      - 2.1.1.6.3. Program Model
      - 2.1.1.6.4. Consultation Model
      - 2.1.1.6.5. Technological Model
  - 2.1.2. Principles of Guiding Action
- 2.2. The Tutor-Teacher and the Tutorial Action
  - 2.2.1. The Tutor's Profile and Competences
  - 2.2.2. Tutorial Action
  - 2.2.3. The Guidance Department
    - 2.2.3.1. Organization of the Guidance Department
    - 2.2.3.2. Composition of the Guidance Department
    - 2.2.3.3. Functions of the Guidance Department
    - 2.2.3.4. Functions of the Members of the Guidance Department
      - 2.2.3.4.1. Functions of the Head of the Guidance Department
      - 2.2.3.4.2. Functions of the Support Teacher
      - 2.2.3.4.3. Functions of the Therapeutic Pedagogy and Hearing and Language Teachers
      - 2.2.3.4.4. Functions of the Teacher of Career Training and Guidance
- 2.2.4. Guidance and Tutorial Action in Career Training
- 2.2.5. The Holland Typology's Model
- 2.3. Tutorial Action Tools
  - 2.3.1. Introduction
  - 2.3.2. The Tutorial Action Plan (TAP)
    - 2.3.2.1. Modalities of Autonomy
      - 2.3.2.1.1. Pedagogical Autonomy
      - 2.3.2.1.2. Managerial Autonomy
      - 2.3.2.1.3. Organizational Autonomy
  - 2.3.3. Information and Communication Technologies (ICT) in Tutorial Action
    - 2.3.3.1. Social Changes
    - 2.3.3.2. Changes in Education
    - 2.3.3.3. ICT used in Tutorial Action
      - 2.3.3.3.1. Webquests
      - 2.3.3.3.2. Blogs
      - 2.3.3.3.3. Webinars
      - 2.3.3.3.4. Wikis
      - 2.3.3.3.5. E-mail
      - 2.3.3.3.6. Discussion Forums
    - 2.3.3.4. Advantages of Using ICT in Tutorial Action
    - 2.3.3.5. Disadvantages of the Use of ICT in Tutorial Action
- 2.4. The Relationship of the Teacher-Tutor with the Student
  - 2.4.1. The Individualized Interview as the Main Tool
    - 2.4.1.1. Importance of Communication
    - 2.4.1.2. Interview between the Tutor Teacher and the Student
    - 2.4.1.3. The Interview in the Aid Relationship
    - 2.4.1.4. Interviewer Skills
    - 2.4.1.5. Types of Interviews
      - 2.4.1.5.1. According to the Number of Participants
      - 2.4.1.5.2. According to the Format
      - 2.4.1.5.3. According to the Mode or Channel

- 2.4.2. Group Dynamics
  - 2.4.2.1. Group Dynamics: Some Examples of Techniques
    - 2.4.2.1.1. Discussion Groups
    - 2.4.2.1.2. Role-Playing
    - 2.4.2.1.3. Dialogical Pedagogical Discussion
    - 2.4.2.1.4. Cineforum
  - 2.4.2.2. Benefits of Applying Group Dynamics
- 2.4.3. Techniques for the Management of Coexistence
  - 2.4.3.1. Learning Values and Norms
  - 2.4.3.2. Social Emotional Education and Classroom Climate
  - 2.4.3.3. Strategies that Facilitate School Coexistence
  - 2.4.3.4. Programs to Educate in Coexistence
- 2.5. Family and School Centers
  - 2.5.1. Introduction
  - 2.5.2. The Evolution of the Family and Society
  - 2.5.3. Demands Made by the Family to the Educational Center and Vice-Versa
    - 2.5.3.1. Demands from the School to the Family
    - 2.5.3.2. Demands from the Family to the School
  - 2.5.4. Family-Educational Center Communication Channels: the School for Parents
    - 2.5.4.1. School for Parents
- 2.6. The Family Interview
  - 2.6.1. Introduction
    - 2.6.1.1. The Ecological Theory of Bronfenbrenner
  - 2.6.2. The Family Interview
    - 2.6.2.1. Keys to an Effective Interview
    - 2.6.2.2. Emotional Education
    - 2.6.2.3. Classification of Interviews
  - 2.6.3. Structure of Interviews
  - 2.6.4. Factors Involved in Family Interview
  - 2.6.5. Steps in Family Interview
  - 2.6.6. Interview Techniques

- 2.6.6.1. Educational Coaching
- 2.6.6.2. Context
- 2.6.6.3. Origins of Coaching
- 2.6.6.4. Principles of Coaching
- 2.6.6.5. Models of Coaching
- 2.6.6.6. Agents Involved in the Coaching Process
- 2.6.6.7. Benefits of Coaching

### Module 3. Complements for the Disciplinary Training of Mathematics

- 3.1. The Formative and Cultural Value of Mathematics in High School Education
  - 3.1.1. The Cultural Importance of Mathematics throughout History
  - 3.1.2. The importance of the Conceptual Contents of Mathematics (its Laws, Principles and Theories) for the Training and Education of the High School Student
  - 3.1.3. Teaching Principles that can be Derived from History
  - 3.1.4. Teaching Principles that can be Derived from the History of Mathematics
- 3.2. Cognitive and Metacognitive Processes in Mathematics
  - 3.2.1. Cognitive Processes in Mathematics
  - 3.2.2. Metacognitive Processes in Mathematics
- 3.3. Language and Mathematics
  - 3.3.1. Language Development and Mathematics
  - 3.3.2. Mathematical Language
- 3.4. Observation, Art and Mathematics
  - 3.4.1. The Golden Number and Proportionality
  - 3.4.2. Other Contributions of Mathematics to Art
  - 3.4.3. Proposal for the Teaching of Geometry through Art
- 3.5. History in the Mathematics Classroom. Ancient Mathematics: Babylon and Egypt
  - 3.5.1. Relevance of History in Science and Mathematics Education
  - 3.5.2. What is the Most Appropriate Role for the Inclusion of the History of Mathematics in Teaching?
  - 3.5.3. Genetic Method of Teaching Mathematics
  - 3.5.4. The First Historical Records of Mathematics
  - 3.5.5. Numbers in Egypt
  - 3.5.6. Numbers in Babylon

- 3.6. Mathematics in Greece
  - 3.6.1. The Greeks: Miletus
  - 3.6.2. Schools of Thought: Thales and the Ionian School, Pythagoras and the Eleatic school
  - 3.6.3. Athens
  - 3.6.4. Euclid
  - 3.6.5. Apollonius
  - 3.6.6. The Alexandrians
  - 3.6.7. Archimedes
  - 3.6.8. Heron
  - 3.6.9. Trigonometry
  - 3.6.10. Algebra and Arithmetic
- 3.7. Mathematics in Asia, the Middle Ages and the Renaissance
  - 3.7.1. Chinese Mathematics
  - 3.7.2. Mathematics in India
  - 3.7.3. The Arab Influence
  - 3.7.4. Romans
  - 3.7.5. The European Middle Ages
  - 3.7.6. Medieval Mathematics
  - 3.7.7. The Mathematics of the Renaissance
  - 3.7.8. The Outlook
  - 3.7.9. Maps
  - 3.7.10. Astronomy and Mathematics
  - 3.7.11. Trigonometry
  - 3.7.12. Arithmetic and Algebra
  - 3.7.13. Logarithms
  - 3.7.14. A New Relationship

- 3.8. The Scientific Method and the New Geometry
  - 3.8.1. Bacon
  - 3.8.2. Descartes
  - 3.8.3. Galileo
  - 3.8.4. Universities and Scientific Societies
  - 3.8.5. Projective Geometry
  - 3.8.6. Coordinate Geometry
  - 3.8.7. Algebra and Geometry
- 3.9. Infinitesimal Calculus and Euler Geometry
  - 3.9.1. Towards Calculus
  - 3.9.2. Newton and Leibniz
  - 3.9.3. Mathematics in the 18th Century
  - 3.9.4. The Bernouilli
  - 3.9.5. Euler
- 3.10. Gamification of Mathematics


#### Module 4. Mathematics Syllabus Design

- 4.1. Syllabus and its Structure
  - 4.1.1. School Syllabus: Concept and Components
  - 4.1.2. Syllabus Design: Concept, Structure and Functioning
  - 4.1.3. Levels of Syllabus Specification
  - 4.1.4. Models of Syllabus
  - 4.1.5. Educational Programming as a Working Tool in the Classroom
- 4.2. Legislation as a Guide to Syllabus Design and Key Competencies
  - 4.2.1. Review of Current National Educational Legislation
  - 4.2.2. What are Competencies?
  - 4.2.3. Types of Skills
  - 4.2.4. Key Competencies
  - 4.2.5. Description and Components of Key Competencies

- 4.3. The Teaching Programming I: Curricular Elements
  - 4.3.1. Subjects Taught in the Specialty
  - 4.3.2. What Is a Teaching Plan? Characteristics and Functions
  - 4.3.3. Basic Elements of a Teaching Plan
  - 4.3.4. Description of the Elements of a Teaching Plan
  - 4.3.5. Cross-cutting Elements
- 4.4. Teaching Plan II: Methodology, Resources, Evaluation and Attention to Diversity
  - 4.4.1. General Considerations on the Methodology
  - 4.4.2. Learning Models
  - 4.4.3. Active Learning Methodologies
  - 4.4.4. Methodology as a Section of the Teaching Plan
  - 4.4.5. Teaching Resources
  - 4.4.6. Complementary and Extracurricular Activities
  - 4.4.7. General Considerations for Scheduling the Evaluation Process
  - 4.4.8. Procedures and Instruments for the Evaluation of Student Learning
  - 4.4.9. Qualification Criteria
  - 4.4.10. Recovery of Subjects Pending from Previous Courses
  - 4.4.11. Attention to Diversity Measures
  - 4.4.12. Evaluation of the Program and Teaching Practice
- 4.5. Design of a Teaching Unit: Objectives, Contents and Competences
  - 4.5.1. Introduction to the Teaching Unit
  - 4.5.2. Contextualization
  - 4.5.3. Teaching Objectives
  - 4.5.4. Skills
  - 4.5.5. Contents
  - 4.5.6. Relation of Objectives, Contents, Competencies, Evaluation Criteria and Evaluable Learning Standards
- 4.6. Creation of the Mathematics Teaching Unit





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- 4.7. Recommendations and Common Syllabus Design Errors. The Teaching Plan in Career Training
- 4.7.1. Layout of the Elements of a Teaching Plan
  - 4.7.2. Layout of the Elements of a Teaching Unit
  - 4.7.3. Most Common Errors in the Teaching Plans and Teaching Units
  - 4.7.4. Planning in Career Training
- 4.8. Example of a Teaching Plan for the 1st Year of High School Education
- 4.8.1. Context
  - 4.8.2. General Stage Objectives and Competencies
  - 4.8.3. Contents, Evaluation Criteria and Evaluable Learning Standards
  - 4.8.4. Specification of the Cross-Cutting Elements
  - 4.8.5. Methodology and Activities
  - 4.8.6. Materials and Resources
  - 4.8.7. Evaluation Procedures and Instruments and Grading Criteria
  - 4.8.8. Attention to Diversity
- 4.9. Example of a Teaching Unit for the 1st year of High School Education
- 4.9.1. Context
  - 4.9.2. Teaching Objectives, Contents, Evaluation Criteria, Evaluable Learning Standards and Competencies
  - 4.9.3. Methodology, Activities and Resources
  - 4.9.4. Assessment
  - 4.9.5. Attention to Diversity Measures

## Module 5. Teaching of Mathematics

- 5.1. Types of Learning
  - 5.1.1. Conductism Applied to Mathematics
  - 5.1.2. Cognitivism Applied to Mathematics
  - 5.1.3. Constructivism Applied to Mathematics
- 5.2. Learning Strategies in Mathematics

- 5.3. Flipped Classroom Applied to Mathematics
  - 5.3.1. The Traditional Class
  - 5.3.2. What Is the Flipped Classroom?
  - 5.3.3. Advantages of the Flipped Classroom applied to Mathematics
  - 5.3.4. Disadvantages of the Flipped Classroom applied to Mathematics
  - 5.3.5. Example of a Flipped Classroom applied to Mathematics
- 5.4. Innovative Pedagogical Methodologies in Mathematics
  - 5.4.1. Gamification in Mathematics
  - 5.4.2. Portfolios/e-Portfolios applied to Mathematics
  - 5.4.3. The Learning Landscape Applied to Mathematics
  - 5.4.4. Problem-Based Learning (PBL) in Mathematics
  - 5.4.5. Cooperative Learning in Mathematics
  - 5.4.6. Comprehension Projects applied to Mathematics
  - 5.4.7. Metacognitive Learning and Mathematics
  - 5.4.8. Flipped Classroom Applied to Mathematics
  - 5.4.9. Peer Mentoring in Mathematics
  - 5.4.10. Conceptual Jigsaw Puzzles Applied to Mathematics
  - 5.4.11. Digital Murals Applied to Mathematics
- 5.5. Math and Its Difficulties
  - 5.5.1. Definition of Learning Difficulties in Mathematics
  - 5.5.2. Learning Difficulties in Mathematics Related to: The Nature of Math Itself, The Organization and Methodology of Teaching, Related to the Student
  - 5.5.3. Common Errors: Problem Solving, In the Steps of the Algorithm
  - 5.5.4. Dyscalculia as a Specific Learning Difficulty: Semativ, Perceptive, Procedural
  - 5.5.5. Causes of Mathematical Learning Difficulty (MLD)
    - 5.5.5.1. Contextual Factors
    - 5.5.5.2. Cognitive Factors
    - 5.5.5.3. Neurobiological Factors
- 5.6. Structure of the Student's Mathematics e-Portfolio
  - 5.6.1. Introduction
  - 5.6.2. Objectives and Goals to be Achieved
  - 5.6.3. Evidence of Learning in Mathematics
  - 5.6.4. Selected Mathematics Work Samples
    - 5.6.4.1. Mathematics Digital Works
    - 5.6.4.2. Non-Digital Mathematics Work
    - 5.6.4.3. Selection of Opinions
    - 5.6.4.4. Mathematics Exams and Tests
    - 5.6.4.5. Mathematics Notes
    - 5.6.4.6. Mathematics Footnotes
    - 5.6.4.7. Journal of Reflection on the Mathematics Learning Process
  - 5.6.5. Personal Reflection on Mathematics Work Completed
  - 5.6.6. Assessment of Portfolio in Mathematics
- 5.7. Conceptual Jigsaw Puzzles applied to Mathematics
  - 5.7.1. Definition of Jigsaw Puzzles
  - 5.7.2. What is a Conceptual Jigsaw Puzzle?
  - 5.7.3. Advantages of Conceptual Jigsaw Puzzles in Mathematics
  - 5.7.4. Disadvantages of Conceptual Jigsaw Puzzles in Mathematics
  - 5.7.5. Example of Conceptual Jigsaw Puzzle Applied to Mathematics
- 5.8. Games in Adolescence (High School Students)
- 5.9. Evaluation and the Teaching-Learning Process
  - 5.9.1. Evaluation and Teaching-Learning
  - 5.9.2. Concept of Learning Evaluation
  - 5.9.3. Headings
  - 5.9.4. Evaluation of the Mathematical Methodology
  - 5.9.5. Evaluation of Mathematical Talent
- 5.10. Teaching to Think in Mathematics

**Module 6. Teaching Innovation and Initiation to Educational Research**

- 6.1. Educational Innovation as a Process and School Improvement
  - 6.1.1. Education and the New Scenarios of the Global and Local Context
  - 6.1.2. Key Concepts: Educational Innovation, Change, Reform and Educational Improvement
  - 6.1.3. Educational Paradigms and Innovation Purposes
  - 6.1.4. Why Innovate, the Meaning of Innovation
  - 6.1.5. Process Models to Generate Educational Innovation
  - 6.1.6. The Importance of a Strategic Approach to Incorporate Educational Innovations
  - 6.1.7. Challenges of Educational Innovation: the Need for a Paradigm Shift and the Role of Research for Educational Improvement
- 6.2. Teaching Innovation: Perspectives, Challenges and Professional Learning
  - 6.2.1. Areas of Innovation in the Educational Context
  - 6.2.2. The Case of Learning Communities
  - 6.2.3. The Obstacles and Challenges of Innovation in the Educational Context
  - 6.2.4. How Do Teachers Learn? From Transmitting Teachers to Inquiring and Creative Teachers
  - 6.2.5. Factors to Promote Learning and Professional Development
  - 6.2.6. From Collective Learning to the Professional Development of the Teaching Staff
  - 6.2.7. Spaces for Meeting and Professional Learning: Congresses, Innovation Conferences, Professional Networks, Communities of Practice and MOOCS
- 6.3. The Design of a Good Practice of Teaching Innovation
  - 6.3.1. From Professional Learning to Good Teaching Practices
  - 6.3.2. Good Practices and the Necessary Conceptual Change
  - 6.3.3. Aspects to be Taken into Account in the Design of Good Teaching Practice
  - 6.3.4. One More Step: Designing and Self-Evaluating Innovative Projects and Practices
- 6.4. Innovative Learning-Centered Designs to Promote Learner Ownership: Innovative Strategies and Practices
  - 6.4.1. The Learner is the Protagonist of its Learning
  - 6.4.2. Rationale for Selecting Learning-Centered Teaching Strategies: Situated Cognition
  - 6.4.3. Rationale for Selecting Learning-Centered Teaching Strategies: The Learning Approach
  - 6.4.4. Generalization and Transfer of Learning: Keys to Promote Learner Protagonism
  - 6.4.5. Teaching Strategies to Encourage Students' Engagement with their Learning
  - 6.4.6. Design of Innovative Practices Focused on Learning: Service-Learning
- 6.5. Innovative Use of Didactic Resources and Means
  - 6.5.1. Paradigm Shift: From Solid Knowledge to Liquid Information
  - 6.5.2. Metaphors on Web 2.0 and their Educational Implications
  - 6.5.3. New Literacies: Educational Visions and Consequences
  - 6.5.4. Digital Literacy and the Development of Competencies
  - 6.5.5. The Meaning and Practices of Digital Literacy in Schools
  - 6.5.6. Literacy and Citizenship: More than ICT Integration
  - 6.5.7. Good Practices in the Innovative Use of Technological Resources
- 6.6. Learning-Oriented Evaluation: Orientation and Design of Good Practices
  - 6.6.1. Evaluation as a Learning Opportunity
  - 6.6.2. Characteristics of Innovative Evaluation
  - 6.6.3. The Dimensions of Evaluation: the Ethical and the Technical-Methodological Question
  - 6.6.4. Innovative Evaluation: How to Plan Evaluation to Orient it to Learning?
  - 6.6.5. Quality Criteria for Developing a Learning-Oriented Evaluation Process
  - 6.6.6. How to Foster Improvement and Learning from Evaluation Results?

- 6.7. Teacher Self-Assessment and Learning Improvement: The Challenge of Educational Innovation
  - 6.7.1. Educational Improvement Makes it Essential to Self-Evaluate the Teaching Task
  - 6.7.2. The Self-Evaluation of Teaching Practice as a Process of Reflection and Formative Accompaniment
  - 6.7.3. Areas of Self-Evaluation of the Teaching Task
  - 6.7.4. Self-Evaluation of Schools for the Improvement of their Educational Processes from an Inclusive Perspective
- 6.8. New Technologies and Educational Research: Tools for Educational Improvement
  - 6.8.1. Educational Research has its Own Character
  - 6.8.2. The Research Process and the Educational Researcher's Viewpoint
  - 6.8.3. Educational Research in the Current Context
  - 6.8.4. Technological Tools for the Development of Educational Research
    - 6.8.4.1. Searching and Updating Information on the Internet
    - 6.8.4.2. Organizing Information
    - 6.8.4.3. Collection of Information in the Field Work
    - 6.8.4.4. Analysis of the Information: Quantitative and Qualitative
    - 6.8.4.5. Report Writing and Publication of Information
- 6.9. From Educational Research to Classroom Research: Improving the Teaching-Learning Process
  - 6.9.1. Educational Research Functions
  - 6.9.2. From Educational Research to Research in the Classroom
  - 6.9.3. Classroom Research and Teachers' Professional Development
  - 6.9.4. Ethical Considerations for the Development of Educational Research
- 6.10. Educational Challenges for the Research and Improvement of Teaching Practice of the Specialty
  - 6.10.1. Educational Challenges for the 21st Century
  - 6.10.2. Research, Innovation and Best Practices in the Specialty
  - 6.10.3. Deontological Framework for Teaching Practice



$$u_{\Delta} = a + b + c$$

$$A_{\Delta} = \frac{g \cdot h}{2}$$

$$\frac{a \cdot h_a}{2}$$

$$\frac{b \cdot h_b}{2}$$

$$\frac{c \cdot h_c}{2}$$

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## Module 7. Inclusive Education and Attention to Diversity

- 7.1. Concept of Inclusive Education and its Key Elements
  - 7.1.1. Conceptual Approach
  - 7.1.2. Difference Between Integration and Inclusion
    - 7.1.2.1. Integration Concept
    - 7.1.2.2. Inclusion Concept
    - 7.1.2.3. Difference Between Integration and Inclusion
  - 7.1.3. Key Elements of Educational Inclusion
    - 7.1.3.1. Key Strategic Aspects
  - 7.1.4. The Inclusive School and the Education System
    - 7.1.4.1. The Challenges of the Education System
- 7.2. Inclusive Education and Attention to Diversity
  - 7.2.1. Concept of Attention to Diversity
    - 7.2.1.1. Types of Diversity
  - 7.2.2. Diversity and Educational Inclusion Measures
    - 7.2.2.1. Methodological Guidelines
- 7.3. Multilevel Teaching and Cooperative Learning
  - 7.3.1. Key Concepts
    - 7.3.1.1. Multilevel Teaching
    - 7.3.1.2. Cooperative Learning
  - 7.3.2. Cooperative Teams
    - 7.3.2.1. Conceptualization of Cooperative Teams
    - 7.3.2.2. Functions and Principles
    - 7.3.2.3. Essential Elements and Advantages
  - 7.3.3. Benefits of Multilevel Teaching and Cooperative Learning
    - 7.3.3.1. Benefits of Multilevel Teaching
    - 7.3.3.2. Benefits of Cooperative Learning
  - 7.3.4. Barriers to the Implementation of Inclusive Schools
    - 7.3.4.1. Political Barriers
    - 7.3.4.2. Cultural Barriers
    - 7.3.4.3. Didactic Barriers
    - 7.3.4.4. Strategies to Overcome Barriers

- 7.4. Social Inclusion
  - 7.4.1. Inclusion and Social Integration
    - 7.4.1.1. Definition of Integration and Elements
    - 7.4.1.2. Concept of Social Inclusion
    - 7.4.1.3. Inclusion vs. Integration
  - 7.4.2. Inclusion in Education
    - 7.4.2.1. Social Inclusion at School
- 7.5. Inclusive School Assessment
  - 7.5.1. Assessment Parameters
- 7.6. ICT and UDL in Inclusive Schools
  - 7.6.1. Traditional Teaching Methods
  - 7.6.2. ICT
    - 7.6.2.1. Concept and Definition of ICT
    - 7.6.2.2. Characteristics of ICT
    - 7.6.2.3. Telematics Applications and Resources
    - 7.6.2.4. ICT in the Inclusive School
  - 7.6.3. Universal Design for Learning
    - 7.6.3.1. What is UDL?
    - 7.6.3.2. UDL Principles
    - 7.6.3.3. The Application of the UDL to the Curriculum
    - 7.6.3.4. Digital Resources and UDL
  - 7.6.4. Digital Media to Individualize Classroom Learning

## Module 8. Creativity and Emotional Education in the Classroom

- 8.1. Emotional Intelligence and the Education of Emotions According to the Mayer and Salovey Model
- 8.2. Other Emotional Intelligence Models and Emotional Transformation
  - 8.2.1. Emotional Competence Models
  - 9.2.2. Social Competence Models
  - 8.2.3. Multiple Models
- 8.3. Socio-Emotional Skills and Creativity According to Level of Intelligence
- 8.4. Concept of Emotional Quotient, Intelligence and Dyssynchrony  
Accommodation in High Intellectual Capacities
- 8.5. Concept of Hyperemotivity
- 8.6. Current Scientific Studies on Creativity, Emotions, Self-Awareness and Intelligence
  - 8.6.1. Neuroscientific Studies
  - 8.6.2. Applied Studies
- 8.7. Practical Classroom Resources to Prevent Demotivation and Hyperemotivity
- 8.8. Standardized Tests to Assess Emotions and Creativity
  - 8.8.1. Creativity Tests and Quizzes
  - 8.8.2. Assessing Emotions
  - 8.8.3. Laboratories and Valuation Experiences
- 8.9. Inclusive Schools: Humanist Model and Emotional Education Interrelation

**Module 9. Neuroeducation**

- 9.1. Introduction to Neuroeducation
- 9.2. Main Neuromyths
- 9.3. Attention
- 9.4. Emotion
- 9.5. Motivation
- 9.6. The Learning Process
- 9.7. Memory
- 9.8. Stimulation and Early Interventions
- 9.9. Importance of Creativity in Neuroeducation
- 9.10. Methodologies that Allow the Transformation of Education into Neuroeducation

**Module 10. Communication in the Classroom**

- 10.1. Learning to Teach
  - 10.1.1. Communication Processes
  - 10.1.2. Teaching Transmission Processes
- 10.2. Oral Communication
  - 10.2.1. Voice in the Classroom
  - 10.2.2. Voice Care in the Classroom
- 10.3. Communication Support Systems
  - 10.3.1. The Use of the Blackboard
  - 10.3.2. The Use of Projectors
- 10.4. The Use of Images in Teaching
  - 10.4.1. Images and Licenses for Use
  - 10.4.2. Author Images
- 10.5. The Use of Video in Teaching
  - 10.5.1. Video as a Support Material
  - 10.5.2. Teaching through Videos
- 10.6. Written Communication
  - 10.6.1. The Reports and Written Assignments
  - 10.6.2. Blogs and Forums
- 10.7. Communication Difficulties
  - 10.7.1. Teaching Difficulties
  - 10.7.2. Classroom Difficulties
- 10.8. Collaborative Processes vs. Competition
  - 10.8.1. Advantages and Disadvantages of Collaborative Learning
  - 10.8.2. Advantages and Disadvantages of Competency-Based Learning
- 10.9. Development of Support Materials
  - 10.9.1. Classroom Supplies
  - 10.9.2. Consultation Material
- 10.10. Development of Network Teaching
  - 10.10.1. Teaching Resources on the Internet
  - 10.10.2. Wikis and Reference Material on the Internet

06

# 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.





“

*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.

“

*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.

“

*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.

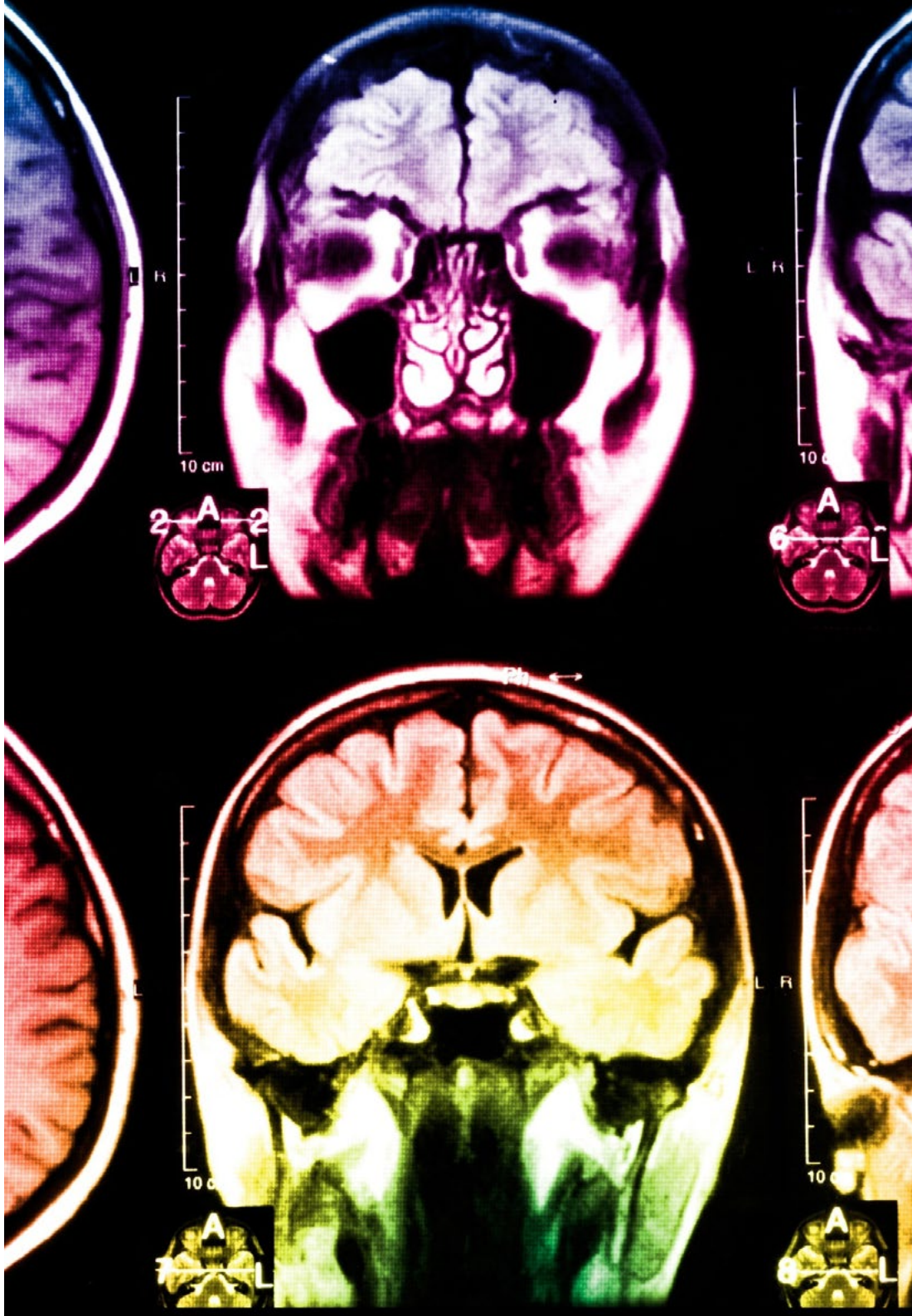
### The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

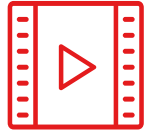
The students' assessment of the quality of teaching, quality of materials, course structure and objectives is excellent. Not surprisingly, the institution became the best rated university by its students on the Trustpilot review platform, obtaining a 4.9 out of 5.

*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.



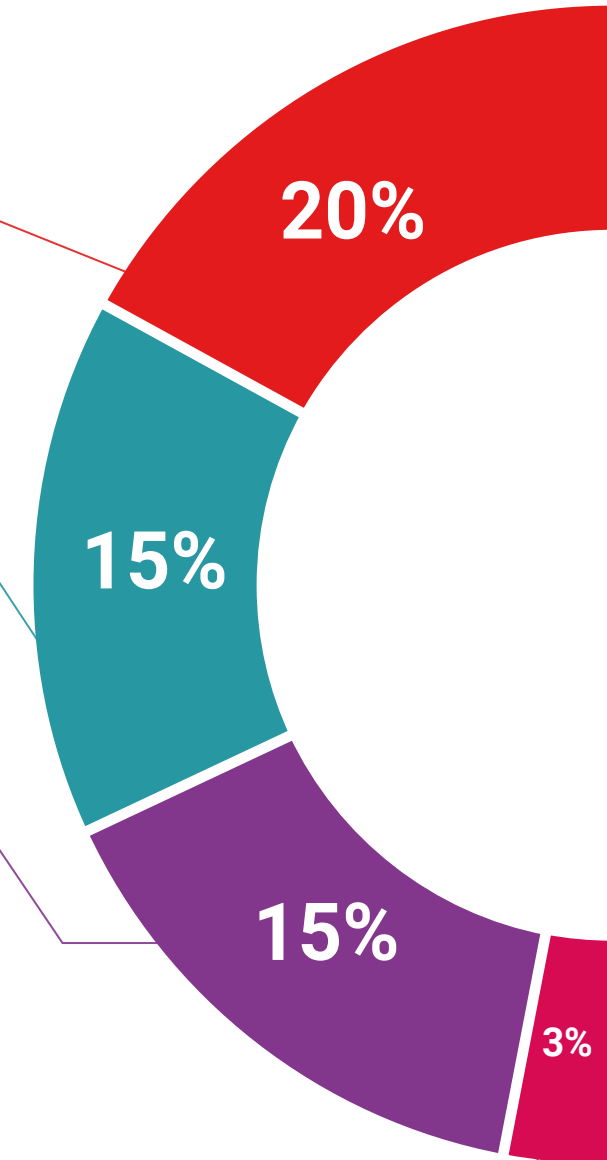
#### Interactive Summaries

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".

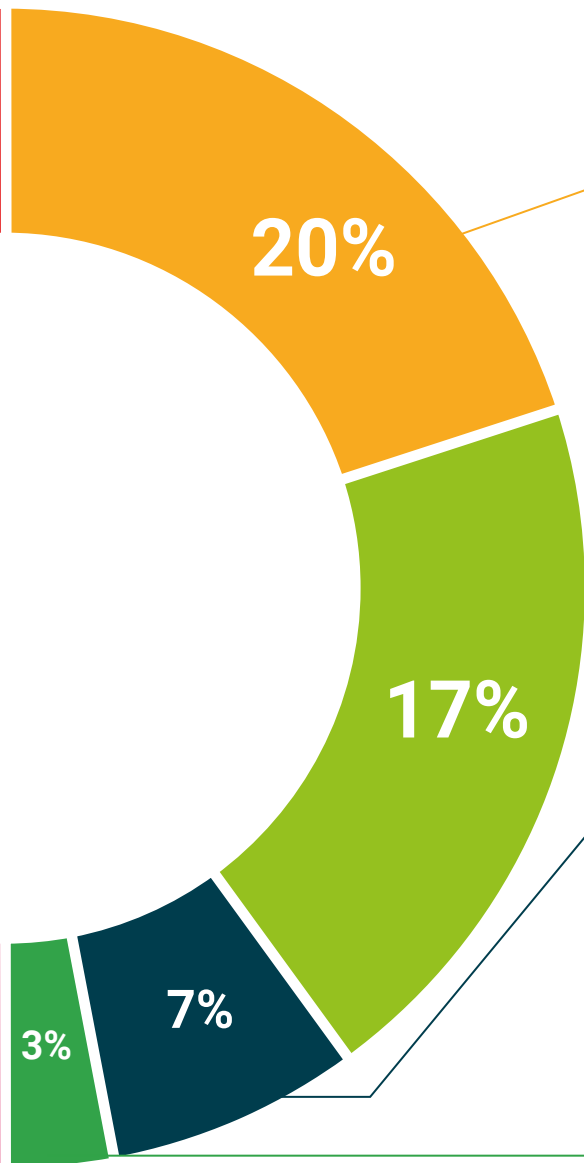


#### Additional Reading

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







**Case Studies**

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.



**Testing & Retesting**

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



**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 for 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.



07

# Certificate

This Professional Master's Degree in Mathematics Teacher Training in High School Education guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree diploma issued by TECH Technological University.



A photograph of two black graduation caps (mortarboards) against a bright blue sky with light clouds. One cap is in the foreground, slightly out of focus, and another is behind it. The image is partially overlaid by a large red and white geometric shape in the bottom right corner.

“

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

This **Professional Master's Degree in Mathematics Teacher Training in High School Education** contains the most complete and up-to-date program on the market.

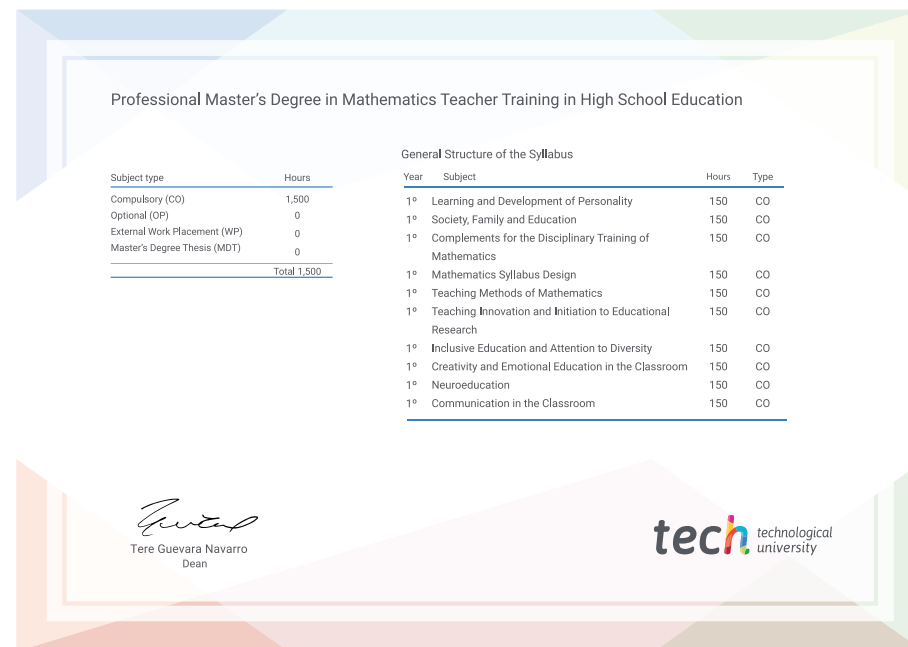
After the student has passed the assessments, they will receive their corresponding **Professional Master's Degree diploma** issued by **TECH Technological University** via tracked delivery\*.

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

Title: **Professional Master's Degree in Mathematics Teacher Training in High School Education**

Modality: **Online**

Duration: **12 months**



\*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.



## Professional Master's Degree

### Mathematics Teacher Training in High School Education

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

Professional Master's Degree

Mathematics Teacher Training in  
High School Education