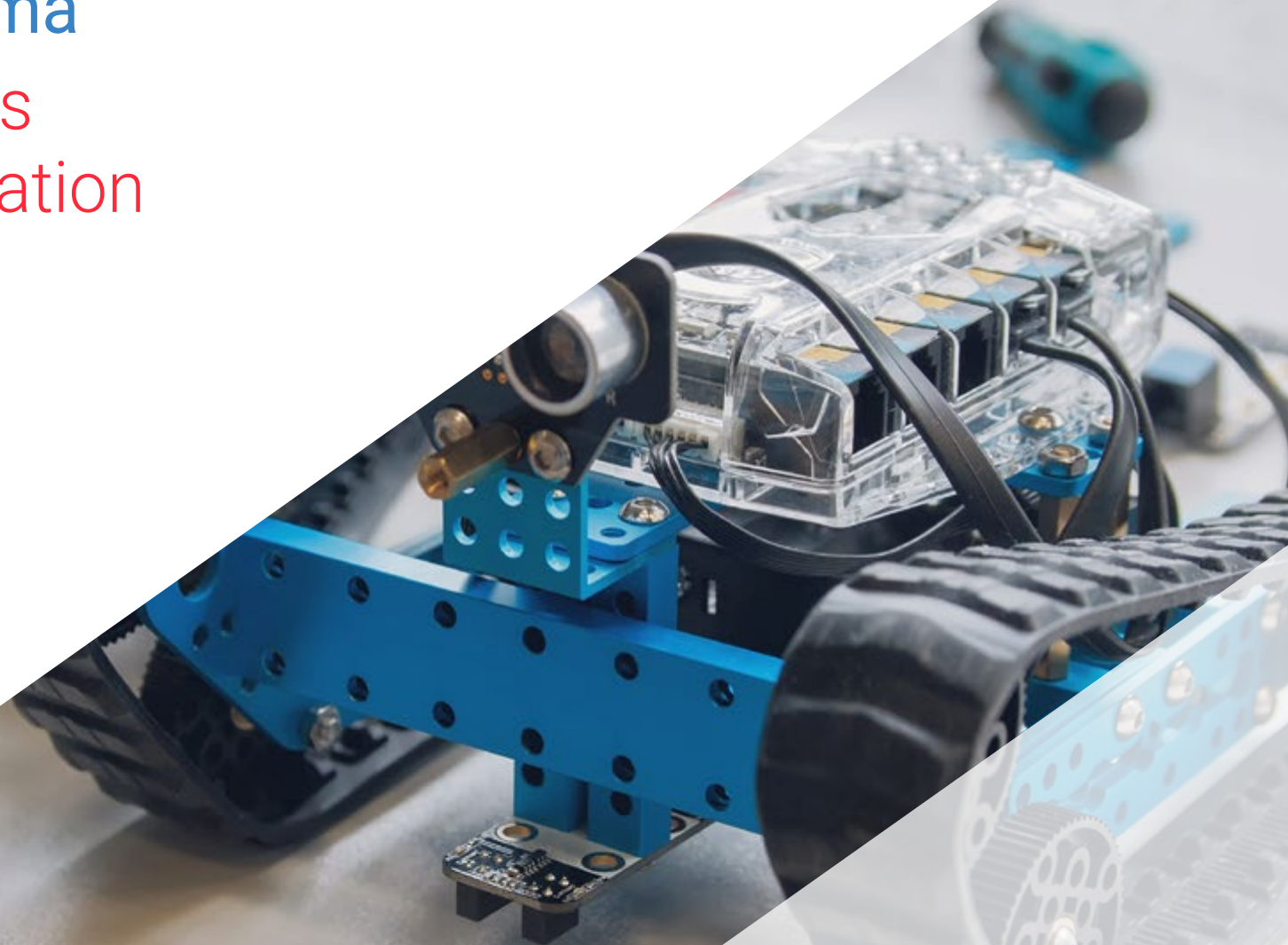


Postgraduate Diploma Educational Robotics in High School Education





Postgraduate Diploma Educational Robotics in High School Education

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 17 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/education/postgraduate-diploma/postgraduate-diploma-educational-robotics-high-school-education

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 16

05

Methodology

p. 20

06

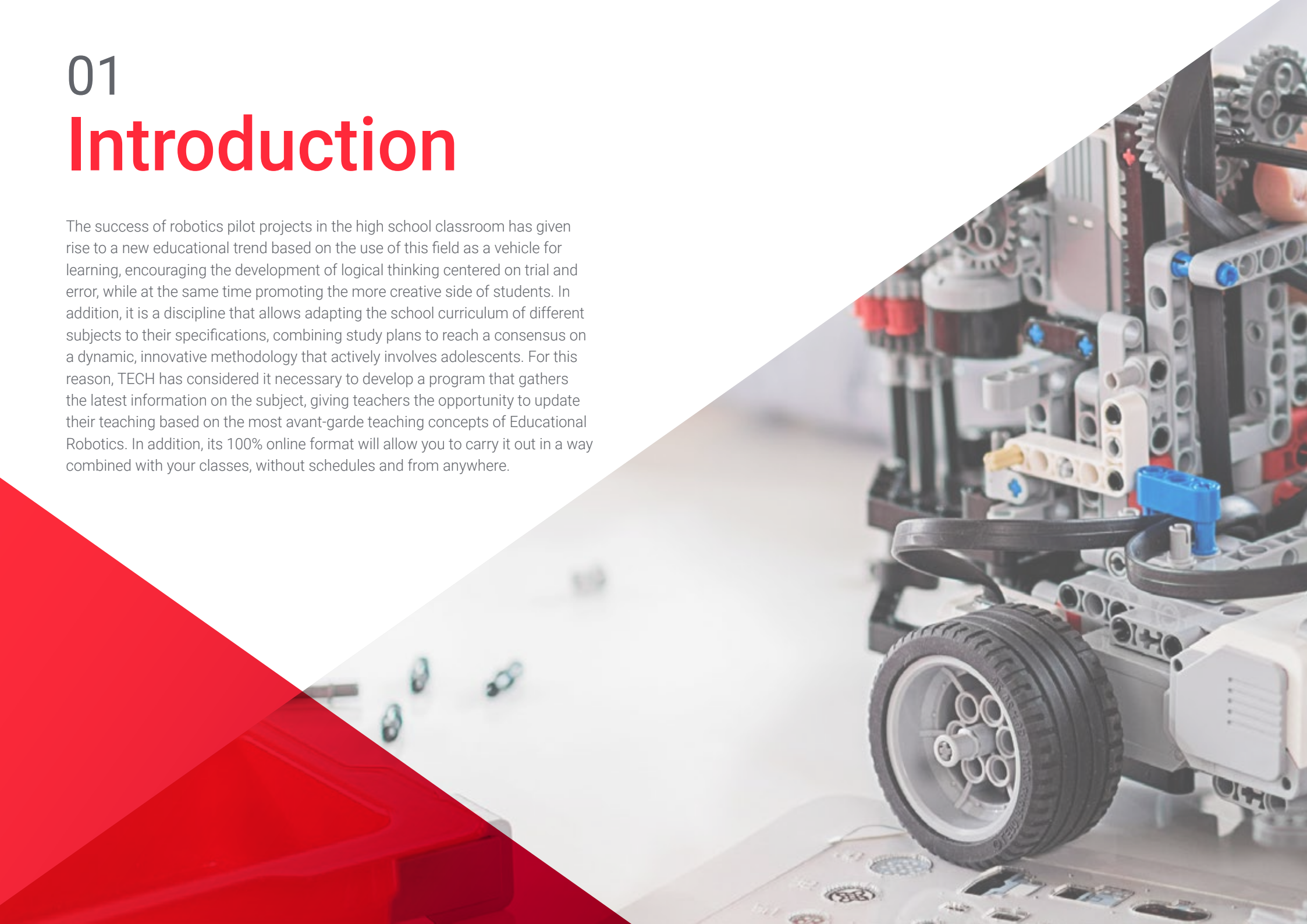
Certificate

p. 28

01

Introduction

The success of robotics pilot projects in the high school classroom has given rise to a new educational trend based on the use of this field as a vehicle for learning, encouraging the development of logical thinking centered on trial and error, while at the same time promoting the more creative side of students. In addition, it is a discipline that allows adapting the school curriculum of different subjects to their specifications, combining study plans to reach a consensus on a dynamic, innovative methodology that actively involves adolescents. For this reason, TECH has considered it necessary to develop a program that gathers the latest information on the subject, giving teachers the opportunity to update their teaching based on the most avant-garde teaching concepts of Educational Robotics. In addition, its 100% online format will allow you to carry it out in a way combined with your classes, without schedules and from anywhere.





“

Implementing the most innovative concepts and fundamentals of Educational Robotics to your academic praxis is now within your reach thanks to this incredible 100% online Postgraduate Diploma"

Creative teaching has become a real challenge for today's teachers, especially in the high school classroom, where capturing the attention of adolescents and stimulating their participation requires a dynamic and avant-garde academic practice. It cannot be overlooked that young people are constantly exposed to the use of different technologies, so any teacher who wants to contribute to their cognitive development must advocate teaching methodologies that include them. One alternative is Educational Robotics, a practice that has shown great results in terms of enhancing logical thinking and learning focused on trial and error and, if that were not enough, most students love it for its interactive, dynamic and innovative nature.

And it is in this field that the Postgraduate Diploma that TECH, together with a team versed in Education and Innovation, has designed in order to enhance technological teaching through a practice based on the latest learning models, is focused. This is an academic experience of 425 hours in which the teacher will find a wealth of theoretical, practical and additional resources to delve into the fundamentals and the evolution of digital tools applicable to the teaching sector, focusing on the teaching strategies that have been best received so far among secondary school students of different ages. You will then be able to place special emphasis on the inclusion of Robotics in the classroom, through knowledge of the most effective models and pedagogical techniques that will help you involve all adolescents in the activities you carry out, enhancing the different types of intelligence through their participation.

All this through a 100% online program which you can access from any device with internet connection, without schedules or classes and with the possibility of adapting the academic calendar to your total and absolute availability. In addition, the entire range of content can be downloaded for your consultation, even when you do not have coverage or when you have completed the 6 months of the program. This will allow you to update your teaching practice in a guaranteed way, contributing to top-level teaching based on technological innovation.

This **Postgraduate Diploma in Educational Robotics in High School Education** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ Case studies presented by experts in Education and Innovation
- ♦ The graphic, schematic, and practical contents with which they are created, provide techniques and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out 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



You will work on the promotion of different educational skills in a dynamic and interactive way through the immersion of technology in the classroom"

“

Do you know the 4 Cs methodology? With this Postgraduate Diploma, you will not only delve into its intricacies, but you will master each of its sections, thanks to which you will become an educational reference"

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

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive knowledge programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

A program that will allow you to awaken your students' interest in scientific careers through active practice in entertaining and cutting-edge projects based on Robotics 2.0.

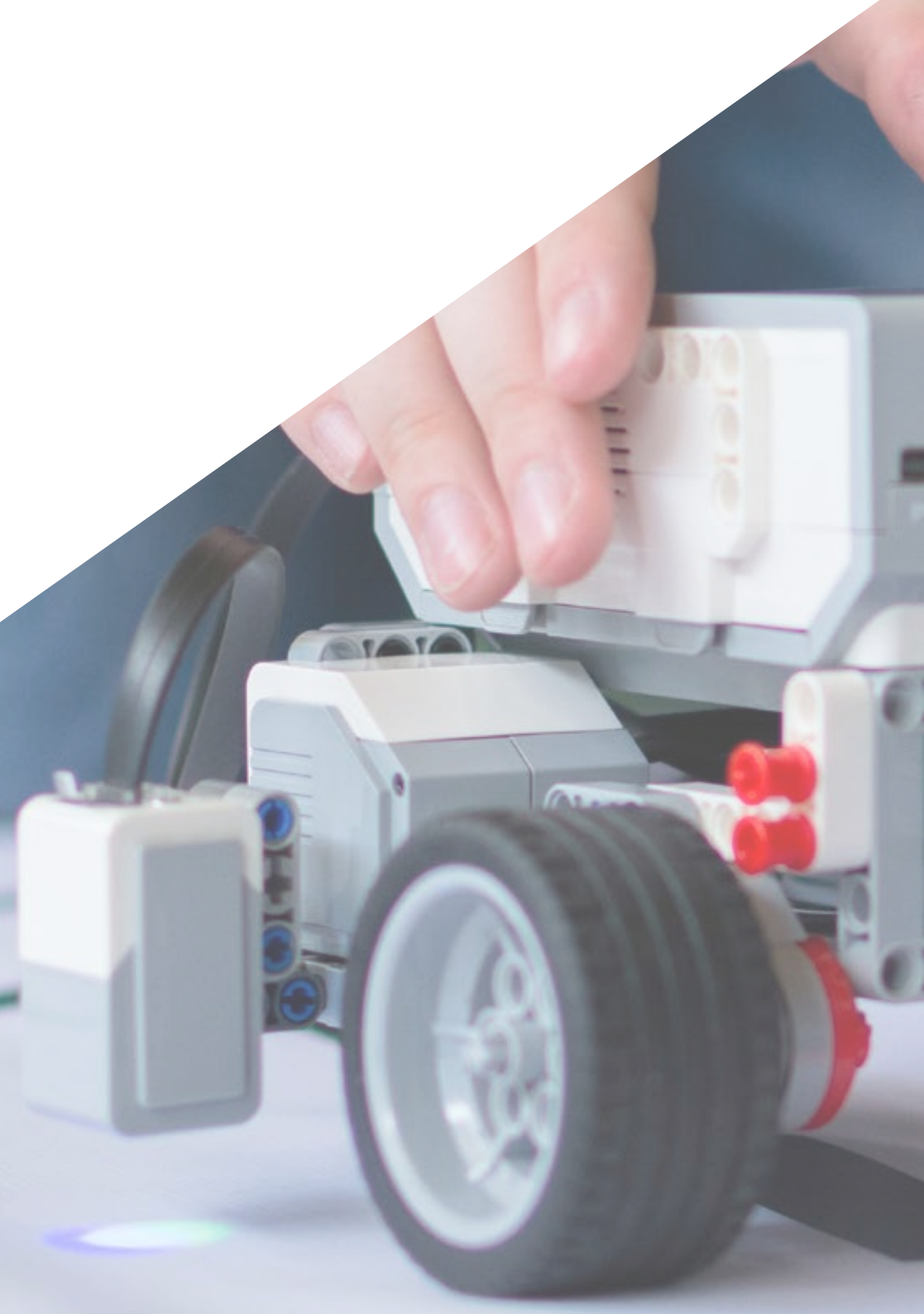
You will be able to implement in your practice the latest learning models of Educational Robotics based on meaningful and active teaching, as well as game-centered education.



02

Objectives

Educational Robotics is becoming more and more established in the academic field, especially in the high school classroom. For this reason, TECH and its team versed in Education has considered necessary the development of this Postgraduate Diploma, which aims to make available to the teacher the most complete and up-to-date information related to technological teaching, allowing them to adapt the different school curricula to the specifications of this innovative practice in just 6 months of this 100% online program.





“

Thanks to this Postgraduate Diploma you will be able to master computational thinking through algorithmic methodology and pseudocode in the high school classroom"

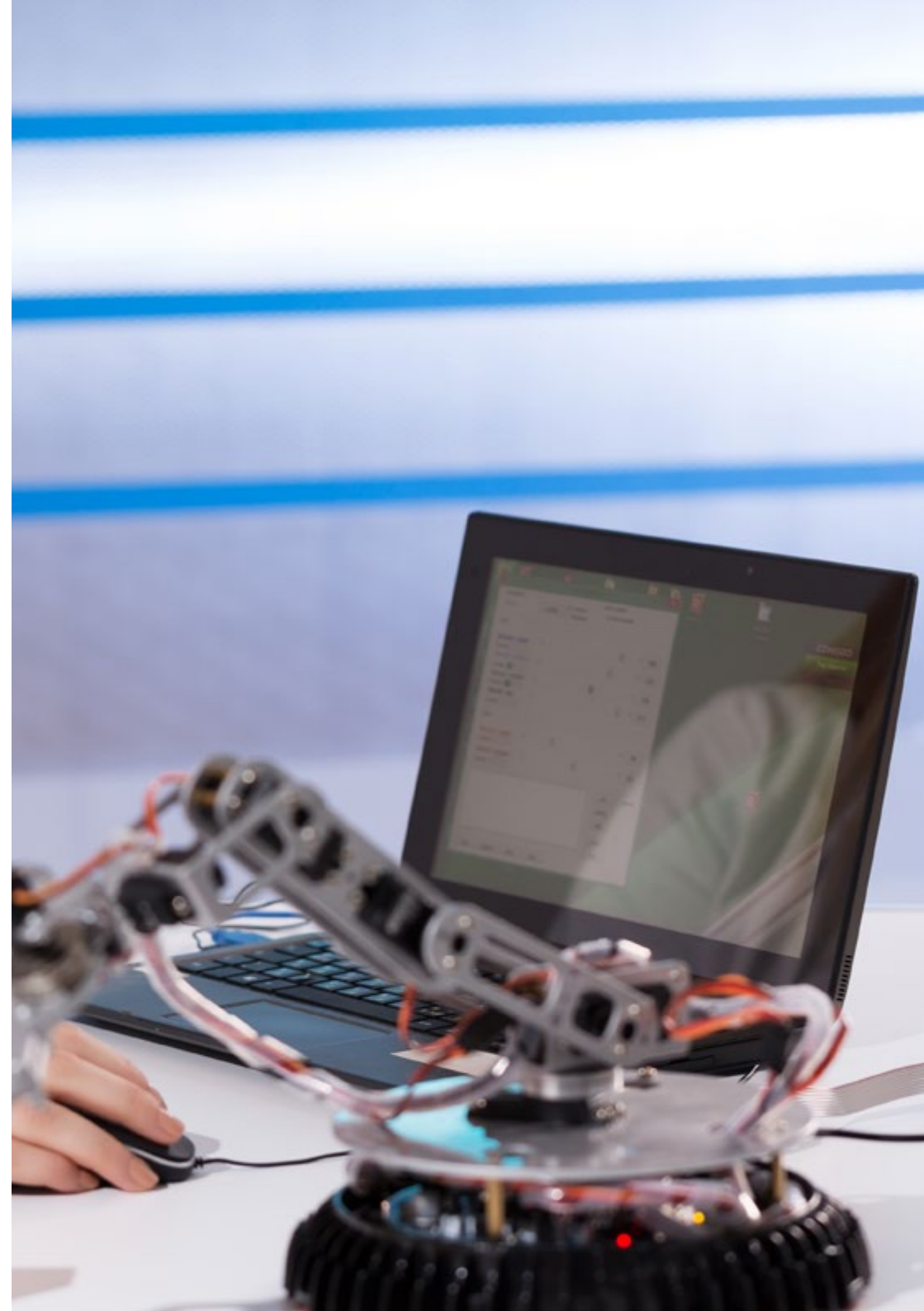


General Objectives

- ♦ Learn how to plan in a transversal and curricular way in the high school educational stages, where education professionals can incorporate new technologies and methodologies in the classroom
- ♦ Raise teachers' awareness of the importance of a transformation in education, motivated by the new generations
- ♦ Learn about new learning models and the application of educational robotics to motivate students towards technological careers



Achieving even your most ambitious academic goals will become a simple task to accomplish thanks to the flexibility of this program and the innovative educational techniques you will find in it"





Specific Objectives

Module 1. Fundamentals and Evolution of Applied Technology in Education

- ♦ Raise teachers' awareness of new educational trends and the direction of their role in education
- ♦ Provide knowledge of new information and communication technology skills
- ♦ Train teachers to promote educational change within the classroom to create environments that improve student achievement
- ♦ Introduce learning theories related to Educational Robotics
- ♦ Understand the laws of robotics

Module 2. Educational Robotics Robots in the Classroom

- ♦ Substantiate the application of robotics pedagogy in the classroom
- ♦ Know the legal and ethical aspects of robotics and 3D printing
- ♦ Teaching STEAM skills as a learning model
- ♦ Transfer the teacher to new physical environments that improve the educational practice
- ♦ Knowledge of computational thinking skills
- ♦ Know the aspects of robotics, educational robotics
- ♦ Learning the impact between Emotional Intelligence and Educational Robotics
- ♦ Explain the introduction of Robotics in early childhood education

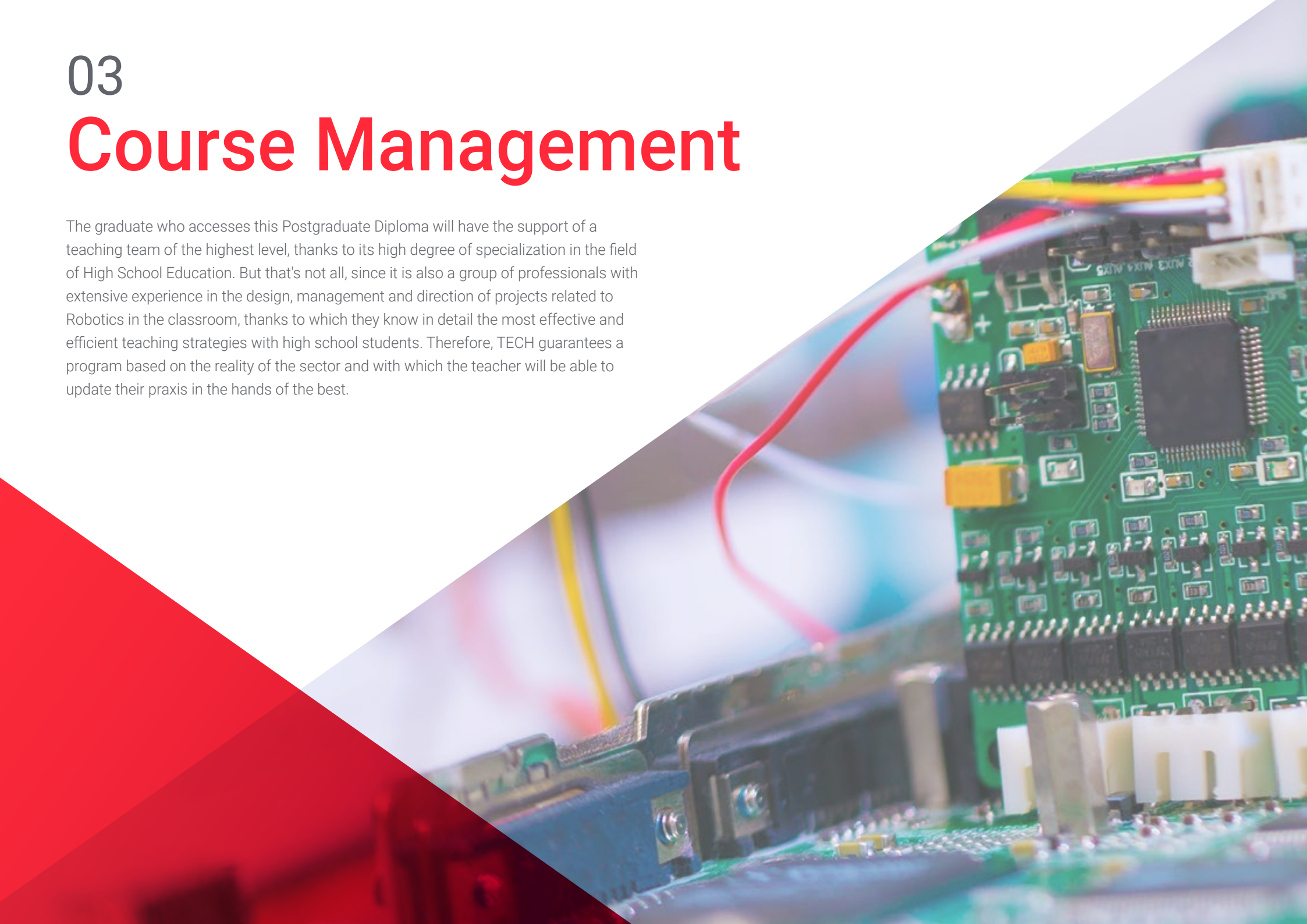
Module 3. Focusing High School Students on the Careers of the Future

- ♦ Learn about Lego Robotic Kits and their electronic components
- ♦ Acquire first notions mechanics by building a robot
- ♦ Understand the different Sensors and applications for Robot motion
- ♦ Get to know the mBot Robot Mobile App
- ♦ Learn different problem-solving strategies to boost the student's investigative instinct
- ♦ Design different teaching materials for the classroom
- ♦ Introduce teachers to the use of advanced robotics to help students overcome challenges
- ♦ Working with Robotics as a motivating and focusing element in the careers of the future
- ♦ Application of Educational Robotics as a curricular subject in secondary school classrooms

03

Course Management

The graduate who accesses this Postgraduate Diploma will have the support of a teaching team of the highest level, thanks to its high degree of specialization in the field of High School Education. But that's not all, since it is also a group of professionals with extensive experience in the design, management and direction of projects related to Robotics in the classroom, thanks to which they know in detail the most effective and efficient teaching strategies with high school students. Therefore, TECH guarantees a program based on the reality of the sector and with which the teacher will be able to update their praxis in the hands of the best.



“

A team specialized in Educational Robotics in the High School Classroom will accompany you during the 6 months of the Postgraduate Diploma to provide you with the most cutting-edge content and resolve any doubts you may have during the program"

Management



Ms. Muñoz Gambín, Marina

- ♦ Teacher and Expert in Educational Technology
- ♦ Head of Educational Robotics and Programming at Robotuxc Academy for Kindergarten and Primary School.
- ♦ Certified in Lego Education© methodology
- ♦ Degree in Early Childhood Education Teaching from CEU Cardenal Herrera University.
- ♦ Educational Coach certified by the Alicante Chamber of Commerce.
- ♦ Emotional Intelligence in the Classroom Trainer
- ♦ Neuroscience Teacher Training
- ♦ Expert in Neurolinguistic Programming certified by Richard Bandler.
- ♦ Certified in Music Education as therapy

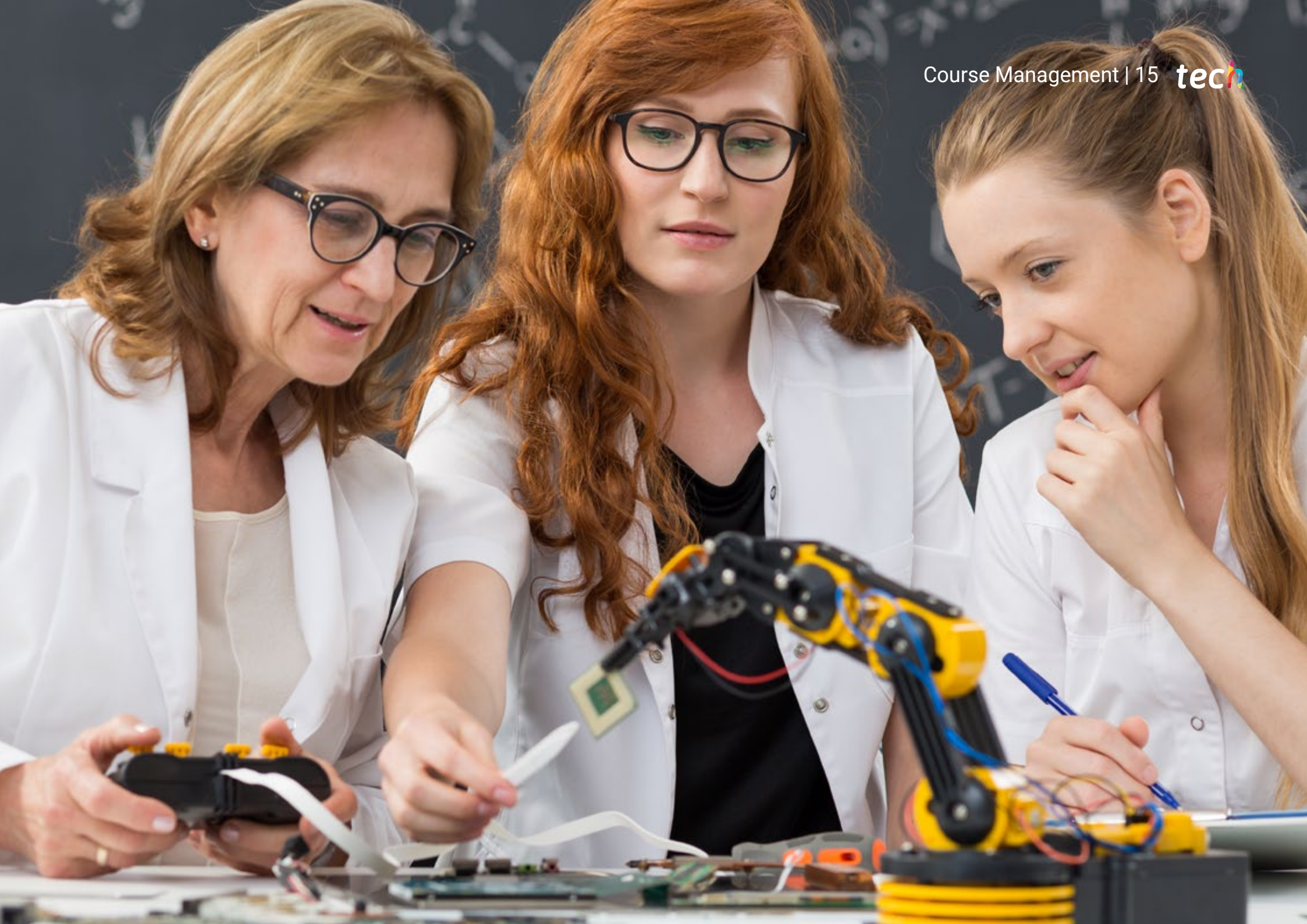
Professors

Ms. Gambín Pallarés, María del Carmen

- ♦ Social Worker and Family Therapist
- ♦ Systemic Family Therapist
- ♦ Social Worker
- ♦ Founder and director of "Educa Diferente" Positive Discipline Alicante.
- ♦ Family and teacher educator in Positive Discipline
- ♦ Lego Serious Play methodology facilitator.
- ♦ Coaching training for professionals

Mr. Coccaro Quereda, Alejandro

- ♦ Specialist in Educational Robotics
- ♦ Expert in Educational Robotics, Design and 3D Printing
- ♦ Robotuxc Academy Robotics National Competition Challenges Specialist
- ♦ Certified in Lego Education© methodology
- ♦ Head of Educational Robotics, Design and 3D Printing for Primary and
- ♦ High School at Robotuxc Academy



04

Structure and Content

The curriculum of this program presented by TECH includes 425 hours of the best theoretical, practical and additional content based on the latest developments in educational robotics in the high school classroom. This way, the professional who accesses it will have diverse material thanks to which they will not only be able to update their practice, but also specialize in the teaching and pedagogical techniques and strategies that are having the best results in the current academic environment. This will enable you to adapt your classes to the cutting edge of teaching, contributing to state-of-the-art learning through technology and innovation.





“

You will have access to a state-of-the-art Virtual Campus that you can access from any device with an internet connection, so you can connect whenever you want and from anywhere”

Module 1. Fundamentals and Evolution of Applied Technology in Education

- 1.1. Aligning with HORIZON 2020
 - 1.1.1. Early Advances in ICTs and Teacher Participation
 - 1.1.2. Horizon 2020 European Plan Progress
 - 1.1.3. UNESCO: ICT Skills for Teachers
 - 1.1.4. The Teacher as a Coach
- 1.2. Pedagogical Foundations of Educational Robotics
 - 1.2.1. MIT - a Pioneering Center of Innovation
 - 1.2.2. Jean Piaget - Forerunner of Constructivism
 - 1.2.3. Seymour Papert - Transformer of Technology Education
 - 1.2.4. George Siemens' Connectivism
- 1.3. Regularization of a Technological-legal Environment
 - 1.3.1. Ethical Agreement on Applied Robotics European Report
- 1.4. Importance of the Curricular Implementation of Robotics and Technology
 - 1.4.1. Educational Skills
 - 1.4.1.1. What Is a Skill?
 - 1.4.1.2. What Is an Educational Skill?
 - 1.4.1.3. Core Skills in Education
 - 1.4.1.4. Application of Educational Robotics to Educational Skills
 - 1.4.2. STEAM. New learning Approach Innovative Education to Train Future Professionals
 - 1.4.3. Technological Classroom Designs
 - 1.4.4. Creativity and Innovation Included in the Curricular Model.
 - 1.4.5. The Classroom as a MAKERSPACE
 - 1.4.6. Critical Thinking
- 1.5. Another Way of Teaching
 - 1.5.1. Why Should we Innovate in Education?
 - 1.5.2. Neuroeducation; Emotion as Success in Education
 - 1.5.2.1. Some Neuroscience to Understand How do we Produce Learning in Children?
 - 1.5.3. The 10 Keys to Gamify your Classroom
 - 1.5.4. Educational Robotics: The Flagship Methodology of the Digital Age

- 1.5.5. Advantages of Robotics in Education
- 1.5.6. Design with 3D Printing and its Impact on Education
- 1.5.7. Flipped Classroom y Flipped Learning
- 1.6. Gardner and Multiple Intelligences
 - 1.6.1. The 8 Types of Intelligence
 - 1.6.1.1. Logical-Mathematical Intelligence
 - 1.6.1.2. Linguistic Intelligence
 - 1.6.1.3. Spatial Intelligence
 - 1.6.1.4. Musical Intelligence
 - 1.6.1.5. Body and Kinesthetic Intelligence
 - 1.6.1.6. Intrapersonal Intelligence
 - 1.6.1.7. Interpersonal Intelligence
 - 1.6.1.8. Naturalistic Intelligence
 - 1.6.2. The 6 Keys to Apply the Different Intelligences
- 1.7. Knowledge Analytical Tools
 - 1.7.1. Applying BIG DATA in Education

Module 2. Educational Robotics; Robots in the Classroom

- 2.1. Beginnings of Robotics
- 2.2. Robo... What?
 - 2.2.1. What Is a Robot? What Isn't a Robot?
 - 2.2.2. Robot Types and Classification
 - 2.2.3. Components of a Robot
 - 2.2.4. Asimov and the Laws of Robotics
 - 2.2.5. Robotics, Educational Robotics and Pedagogic Robotics
 - 2.2.6. DIY (Do It Yourself) Techniques
- 2.3. Educational Robotics Learning Systems
 - 2.3.1. Meaningful and Active Learning
 - 2.3.2. Project-Based Learning (PBL)
 - 2.3.3. Play Based Learning
 - 2.3.4. Learning to Learn and Problem Solving

- 2.4. Computational Thinking (CT) Comes to the Classrooms
 - 2.4.1. Nature
 - 2.4.2. The PC Concept
 - 2.4.3. Computational Thinking Techniques
 - 2.4.4. Algorithmic Thinking and Pseudocode
 - 2.4.5. Computational Thinking Tools
- 2.5. Educational Robotics Work Formula
- 2.6. Four C methodology to Boost Your Students
- 2.7. General Educational Robotics Advantages

Module 3. Focusing High School Students on the Careers of the Future

- 3.1. Robotics as a Motivator
 - 3.1.1. Motivation as a Learning Strategy
 - 3.1.2. Educational Robotics Against School Dropout. OECD Report
 - 3.1.3. The Road to the Careers of the Future
 - 3.1.4. Robotics as a Subject in High-School Education
 - 3.1.5. Robotics for Youth Entrepreneurship
- 3.2. How Can We Introduce Resources in High School Classrooms?
- 3.3. Be Electronic
 - 3.3.1. Importance of Open-Source Hardware (SSO)
 - 3.3.2. Educational Uses of Open-Source Technology
 - 3.3.3. What Is Arduino?
 - 3.3.4. Arduino Components
 - 3.3.5. Arduino Types
 - 3.3.6. Arduino Software
 - 3.3.7. How the Protoboard Works
 - 3.3.8. Fritzing As a Training Platform
- 3.4. LEGO Mindstorms Education EV3
 - 3.4.1. LEGO Mindstorms Development. MIT + Lego®
 - 3.4.2. Mindstorms Generations
 - 3.4.3. LEGO Mindstorms Robotics Kit Components
 - 3.4.4. EV3 Software
 - 3.4.5. Coding blocks

- 3.5. Taking up mBot
 - 3.5.1. Challenge: Wall-Tracking Robot
 - 3.5.2. The Robot Solves Maze Challenges
 - 3.5.3. Follow the Advanced Lines Challenge
 - 3.5.4. Autonomous Vehicle Challenge
 - 3.5.5. SumoBot Challenge
- 3.6. Skills: The Challenge of the Best
 - 3.6.1. Types of Educational Robotics Competitions
 - 3.6.2. RoboCup
 - 3.6.3. Robotics Competition
 - 3.6.4. First LEGO League (FLL)
 - 3.6.5. World Robot Olympiad (WRO)
 - 3.6.6. Robotlympic



Bet on the program that will give you the keys to raise the talent of your students to the maximum through innovative and dynamic Educational Robotics projects that will enhance their creativity to the maximum"

05

Methodology

This training program offers a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH Education School we use the Case Method

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

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



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

“

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

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

1. Educators who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process is solidly focused on practical skills that allow educators to better integrate the knowledge into daily practice.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life teaching.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



Relearning Methodology

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

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



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

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

With this methodology we have trained more than 85,000 educators with unprecedented success in all specialties. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

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



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



Study Material

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

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Educational Techniques and Procedures on Video

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



Interactive Summaries

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

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



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Expert-Led Case Studies and Case Analysis

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



Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises: so that they can see how they are achieving your goals.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



Quick Action Guides

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



06

Certificate

The Postgraduate Diploma in Educational Robotics in High School Education guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.





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

This program will allow you to obtain your **Postgraduate Diploma in Educational Robotics in High School Education** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

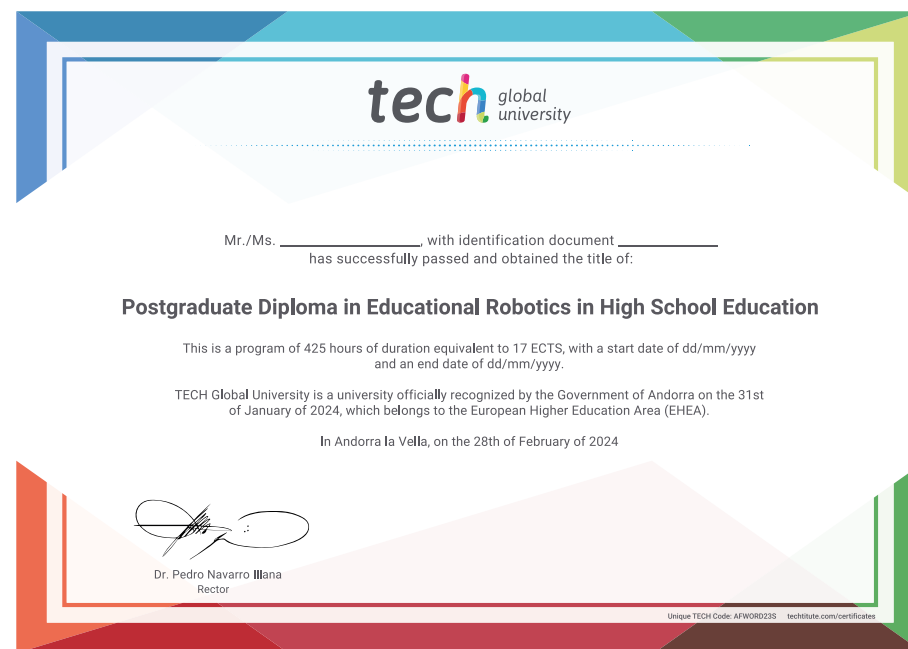
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Educational Robotics in High School Education**

Modality: **online**

Duration: **6 months**

Accreditation: **17 ECTS**



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 Diploma Educational Robotics in High School Education

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 17 ECTS
- » Schedule: at your own pace
- » Exams: online

Postgraduate Diploma Educational Robotics in High School Education

