Objectives

- ✓ Provide teachers with practical ideas on how they can incorporate technology into their lessons;
- ✓ Promote basic training on topics such as controls, automatisms, robots and programmable machines;
- ✓ Familiarize teachers with current use of robotics and coding in nowadays education trends;
- ✓ Providing innovative ways of teaching STEM (Science, Technology, Engineering and Mathematics) using problem solving, object analysis, use of scales…
- ✓ Promote new digital competences among teachers;
- ✓ Developing actively and constructively students' involvement in the work at class using coding and robotics;
- ✓ Enlarge teachers technic vocabulary and familiarize them with different programming languages;
- ✓ Exchanging experiences in cooperative and collaborative learning process as long as in creativity and innovation;
- ✓ Sharing of good practice in teaching and learning, using coding and robotics, enabling teachers to become confident and competent enough to create an interactive classroom experience for their students.

Target Group

The training course is addressed to primary and secondary school teachers, school directors and IT coordinators and all teaching staff in general who wish to acquire the needed skills for applying coding and robotics with educational purposes.

Language of course

This course is provided in English.

Methodology

The approach used is highly practical, based on the expertise of the course trainers who have different years experience.
Practical simulations will be carried out for each topic..
The objective of the practical activities is the simulation of the use of robots and coding during lessons.

Programme

Day 1 – 4 hours
Introduction to Robots, automatic and control systems and programming languages

- Presentation of participants and sharing expectations.
- Introduction to control systems and robotics with arduino board.
- Robot architecture: Main parts. Sensors and Actuators. Feedback concept.
- Flux diagrams and programming. Introduction to coding.
- Use of computer as element for coding and control. Control languages. Using scratch in mblock: an easy way to start programming.
- An introduction to the arduino board. Inputs and outputs
- Using a protoboard. Connecting sensors and actuators.
- Practical use of sensors, controllers and actuators: prototyping.

Day 2 – 4 hours
Using mblock for coding Arduino microcontrollers

- Introduction to coding with mblock. Variables and functions. Programming conditioning sentences and loops. Programming communication for serial ports
- Use of sensors with mblock: potentiometer, lights, infrared, ultrasound, button, …
- Use of peripheral devices in mblock: LEDs, DC motors, servo motors, buzzers…
- Projects: making a digital dice; simple traffic light; two traffic lights; controlling a servo with a potentiometer.

Day 3 – 4 hours
Using mblock for programming robots

- How to build an educative robot. Recommended tools and components.
- Continuous servo motor to move robots
- Making a robot from scratch
- Programming a robot: Robot that hide from lights / Robots that follow lines

Day 4 – 4 hours
Robotics applications in the classroom: robots and Physics experiments for school

- Using a commercial educational robot. Introducing mbot
- Programming mbot: how to avoid an obstacle/ hiding from lights / robot that follows lines
- Time measurement (timer) with arduino board and mblock.
- Galileo's experiment with arduino / Simulating an elevator

Day 5 – 4 hours
Professional visit

- Visiting a school in Valencia.
- Meeting with teachers and students.
- Evaluation and certification.
- Farewell lunch/dinner.

Fees

Course fee: 423,50 €/participant VAT included. Possibility of invoicing 350,00 €/participant if sending organisation has Intracomunitary VAT number.

- ✓ Preparation for the course
- ✓ Tuition
- ✓ Training materials
- ✓ Administration costs
- ✓ Organizational costs
- ✓ Professional visit to school
- ✓ City tour in Valencia
- ✓ Farewell dinner

Requirements

Minimum of 8 participants. For smaller groups, contact us.

Contact

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