

## LEARNING TO CODE THROUGH ROBOTICS

A real action-based way to understand computer programming



Learn about robotics and develop your coding skills through robotics! Develop teaching skills and methods to help your students learn computer programming contents and techniques with a reality based approach using robots. Help your students develop algorithmic thinking skills and STEM (Science, technology, engineering, and mathematics) contents through robotics and coding.

Location: **Faro, Portugal** | Duration: **5 days** | Fee: **420€** | Total Seats: **16 Seats**

### Main Contents

- Lego Education and Carnegie Mellon methodology;
- Introduction to robotics;
- EV3 hardware and software;
- Programming inputs (sensors) and outputs (motors);
- Loops and conditions;
- Variables, data types and operators;
- Functions;
- Robotics class management;
- Robotics in the school curriculum.

## Course Program

### Day 1

- Course and participant presentation;
- Lego and creativity in education;
- Coffee break;
- Lego Education and Carnegie Mellon developed methodology;
- Lunch;
- Introduction to robotics, EV3 hardware and software.

### Day 2

- Basic programming;
- Programming outputs (motors);
- Coffee break;
- Programming inputs (sensors).
- Lunch;
- Application tasks
- Coffee break;
- Loops and conditions.

### Day 3

- Coffee break;
- Application tasks;
- Lunch;
- Advanced loops and conditions;
- Coffee break;
- Group challenge.

### Day 4

- Variables, data types and operators;
- Coffee break;
- Application task;
- Lunch;
- Functions;
- Coffee break;
- Robotics class management.

### Day 5

- Robotics in the school curriculum: adopting, adapting and integrating;
- Coffee break
- Course evaluation and Certification;
- Lunch;
- Cultural visits and activities.

Note: The course program can be changed according to participant's profile and local holidays or the of the schools/university agenda where the course will take place.

## Target group

Primary and Secondary school teachers and managers.

## Course methodology

- Brief introduction to each of the topics.
- Participants are involved in practical tasks including robot hardware assembly, adjustment and configuration, programming and debugging;
- Participants solve suggested tasks and challenges using EV3 software and hardware. Each one or two participants (depending on the number of course participants) will have one computer and one EV3 robot to practice and solve the suggested challenges;
- Participants share experiences and best solutions in group and plenary sessions;
- Individually or in groups, participants reflect and debate on robotics class management and robotics introduction in the school curriculum.

## Course fee

- The course fee is 420€;
- Cultural visits and meals are paid separately;
- Algarve cultural visit has the cost of 50€. Participants not willing to join the cultural visit must notify ACJI 15 days before course starts

## Validation

The course participants will get a Certificate of participation and a Declaration of Obtained Competences.

The competences acquired will be validated by the course organizers on the Europass mobility. Participants must ask their national agency to issue the Europass (Visit our website [Documents – Europass mobility](#)).

## Accommodation and Meals

- Participants book their accommodation. ACJI will advise participants for hotel choice in different price categories. Participants are free to choose hotels and restaurants. Accommodation is paid directly by participants to hotels and restaurants.
- Lunches and coffee are available in or around the school where the course will take place.

## Planned courses

- July 29<sup>th</sup> to August 2<sup>nd</sup>, 2019
- July 27<sup>th</sup> to 31<sup>th</sup>, 2020