





## DESCRIPTION

Within the technological boom we experience nowadays, the demand after engineering specialists is rapidly increasing. This course is designed for teachers of all subjects, who desire to learn and then to teach efficiently about fast developing disciplines such as Coding and Robotics, which are considered to be an inseparable part of human future life.



## METHODOLOGY

The methodology used in the course is "learning by doing" in the form of a guided tutorial. The teacher, after briefly explaining some concepts and approaching the necessary tools, proposes a project in which students will have to create educational resources for the class.

The teacher then becomes a support, helping the students in their learning experience, at the end of the course there will be a test to assess the learning outcomes and the knowledge gained.





# COMPETENCES

On completion of this course participants will be able to:

- Know the principles of computational logic
- Obtain the necessary knowledge to, as a teacher, help in the development of students' programming skills
- Know how to use a variety of digital resources to make activities more interesting for students
- Increase student engagement and motivation
- Use of student devices inside and outside the classroom
- Development of collaborative activities
- Increase performance and effectiveness in lesson preparation
- Taking advantage of the resources available for the classroom, free and easy to use
- To be more effective teachers, knowing how to solve computational logic





## RESULTS

- The participant enters the context of the history and development of robotics
- The participant becomes familiar with the programming language
- The participant increases their computational logic skills
- The participant knows the basic structure and elements of a robot
- The participant knows how to create different programs in a robot
- The participant learns how to communicate with a robot





# DAY BY DAY

## WELCOME SESSION

Course mentor  
Introducing the Tutor  
Handing in of the course folders and useful information  
Introducing the course objectives.

## DAY 1: INTRODUCTION TO ROBOTICS

Presentations  
Robotics History  
**COFFEE BREAK**  
Artificial Intelligence  
Robotics Future

## DAY 2: PROGRAMMING AND COMPUTATIONAL LOGIC. MBLOCK

Introduction to programming  
**COFFE BREAK**  
Features software MBLOCK  
Introduction to block construction MBLOCK

## DAY 3: CONSTRUCTION AND PROGRAMMING. EDUCATIONAL ROBOT MBOT

Features hardware MBOT  
Robot Construction  
**COFFEE BREAK**  
Motion programming, lights and sounds, LED display

## **DAY 4: FEATURES AND PROGRAMMING: ROBOT SENSORS**

Ultrasound sensor  
**COFFEE BREAK**  
Line following sensor  
Light sensor

## **DAY 5: ROBOT COMMUNICATIONS**

Use and programming remote control  
**COFFEE BREAK**  
Bluetooth communications  
Hybrid programming with the computer

## **DAY 6: PROGRAMMING LANGUAGES. ARDUINO**

Comparison of block programming and traditional communication languages  
**COFFEE BREAK**  
Study of Arduino programming language

## **DAY 7: PROGRAMMING LANGUAGES. PHYTON**

Study of Phyton programming language

## **DAY 8: ADVANCED ROBOTS SIMULATIONS. NAO**

NAO: physical features and basic applications  
**COFFEE BREAK**  
NAO'S software

## **DAY 9: INDUSTRIAL ROBOT SIMULATION**

Software environment to robotic simulation: CoppeliaSim  
**COFFEE BREAK**  
Robotic arms usefulness  
Programming and generic robotic arm simulation with CoppeliaSim

# DAY 10: PERSONAL PROJECT AND FINAL CONCLUSIONS

Creating my own personal project

COFFEE BREAK

Overall perspective of education programme

ROUND UP

COURSE MENTOR

iDevelop Quality Assessment Questionnaire.

Handing in Mobility Agreements.

Handing in Europass Mobility Certificates.

Handing in Training Certificates.





# idevelop

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