

LABORATÓRIOS INTEGRADOS - ROBÓTICA

Code: 20003

Main Scientific Area: Intelligent Systems and Control

Lecturer: Tiago Rafael dos Santos Martins Pereira Rodrigues

Language of Instruction: Portuguese

Regime: T2

Contact Hours: 24h Total Workload: 57h

ECTS: 3,0

Objectives

The Integrated Laboratories - Robotics Curriculum aims to equip students with essential skills to understand, design, and implement robotic solutions and projects in educational contexts.

Learning Outcomes

Students who successfully complete this course should be able to: (1) Identify the main characteristics of robots; (2) Analyze robotic projects in educational contexts; (3) Select, build and program robots in task; (4) Specify, plan and implement a robotics project to solve a problem; (5) Adapt the projects and objectives of its use to the age group of recipients of each project.

Course Contents

1. Robots: characteristics and potential for use in educational contexts.
2. Block-based Visual Programming Environments.
3. Construction and programming of robots to perform tasks and solve problems in an educational context.

Recommended Bibliography

- Myint Swe Khine (Ed.), Robotics in STEM Education (2017), Springer International Publishing, DOI: 10.1007/978-3-319-57786-9
- Loh Sau Cheong, Transforming Classroom Practice through Robotics Education (2018), Cambridge Scholars Publishing, ISBN: 1527515761

Learning and Teaching Methods

In this CU students will analyze different robots, identifying their characteristics, exploring and discussing the potential of their use in educational contexts, checking their suitability for the target age group of children and young people. Robotic projects in educational contexts emerge in the sense of developing logical reasoning and the ability to solve problems. It is also pertinent to promote the ability to analyze existing robotics projects in educational contexts, both formal and non-formal. Students must be able to select, build and program robots to perform tasks and solve problems, it is therefore essential to know the main characteristics of robots, their potential for use, as well as their programming, using visual programming environments based on blocks.

Assessment Methods

The evaluation in regular season considers two components: carrying out tasks proposed during laboratory classes (40%); robotic project to solve a problem in an educational context (60%). The UC also provides for the possibility of assessment by exam.