INTEGRATED LABORATORIES II

Mestrado em Engenharia Eletrónica e de Computadores

Code: 26805

Main Scientific Area: Intelligent Systems and Control

Lecturer: João Pedro Borges Araújo Oliveira Silva

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 30h Total Workload: 138h

ECTS: 6,0

Objectives

This curricular unit aims to expose students to the different contents and objectives of the present UCs in the semester in a single project. Students are expected to obtain capabilities that enable the specification, development, and implementation of an automated production line with robotic system and respective graphical applications for monitoring, control and production reporting. Whenever possible, the study will be based on practical cases of real applications.

Learning Outcomes

Students who successfully complete this course unit should be able to:

1. Identify the fundamental concepts associated with electronic circuits, certification processes and standards, and the development of software solutions.

2. Know the typical components in pneumatic and hydraulic circuits.

3. Know the process of developing automation solutions and configuration of the development environment for graphical applications.

4. Be able to define the specification, development and testing of an application considering the requirements imposed.

5. Develop robotic solutions.

Course Contents

Depending on the objectives of each team, including:

1. Integration in the work team;

2. Definition of the tasks to be performed;

3. Applied skills and acquired competencies:

4. Evaluation of the integration methodology;

5. Self-assessment of individual and team performance.

Recommended Bibliography

Giraldes, E., Fernandes, V., Smith, P.; ‘Curso de Álgebra Linear e Geometria Analítica’. McGraw-Hill• Meireles, V. (2003). Circuitos Eléctricos, Lidel.• “Automação Pneumática (3.ª Edição)”, Adriano Manuel de Almeida Santos, António José de Sousa Ferreira daSilva, Publindústria, 2014• João R. Caldas Pinto, Técnicas de automação, 3ª Ed, ETEP, 2010• A Practical Introduction to Computer Vision with OpenCV, Wiley

Learning and Teaching Methods

The integration development process allows students to gain the ability to set up a software development environment fora variety of future applications, learn about components and equipment typically used in the course areas, and the standards associated with the projects. Learning about this teaching methodology creates unique teaching opportunities for students, allowing them to explore creativity, critical thinking and teamwork to achieve the different objectives proposed by the teams at the beginning of each project.

Assessment Methods

Approval in this course unit is obtained with a grade of 10 or more, on a scale of 0 to 20, resulting from the evaluations of the different components:

10% delivery and evaluation of Phase 2.

20% evaluation of the user manual.

20% evaluation of the final report.

50% presentation and defense of the solution, Phase 4.