ROBOSTEM Project

Agreement no: 2019-1-RO01-KA202-063965

Lesson Plan "Application of microcontrollers in Industrial Robotics"

Topic: Application of microcontrollers in Industrial Robotics
Subject: Industrial Automation

Target Group:

VET students, aged between 15 - 18.

Objectives:

Obj1. To provide a basic understanding of Industrial Robotics and its benefits
Obj2. To explain the crucial role played by microcontrollers in Industrial Robotics
Obj3. To prepare students for Industry 4.0 revolution
Obj4. To boost the development of STEM skills
Obj5. To improve the employability of VET students

Approach/Methodology used: This lesson focuses on teaching VET students about the application of microcontrollers in Industrial Robotics. The teacher will use a PowerPoint presentation to lecture on the basics of Industrial Robotics, showing what it is, what are its benefits and how the microcontrollers are used how the microcontrollers are used to control various industrial robotic systems. Next, the students are involved in a case study activity where they put into practice what they have learnt.

Means/Tools/Educational technology

- A projector or interactive whiteboard and a computer with the software needed for running the PowerPoint presentation.
- Case study template

Plan for work

Time	Activities	Methods/ means
10 min.	Use a PowerPoint presentation to introduce the basics of Industrial Robotics, to show what it is, what are its benefits, and the role of microcontrollers in controlling industrial robots.	Lecture / Projector or interactive whiteboard
20 min.	Prepare the students for the case study activity. Form teams of 3-4 students, hand them the case study template. Ask the teams to select a type of industrial robot and to describe how it can be controlled with the help of a microcontroller, using the case study template.	Collaborative work; Case study / Case study template

	Supervise and support the teams while they are preparing the case studies.	
15 min.	Ask the teams to either present their case study to the class or to another team.	Classroom discussion

Assessment/Feedback:

The teacher will evaluate the case studies prepared by students as well as the presentations made by them in the last part of the lesson.

Bibliography:

- Robotics Technology, https://builtin.com/robotics
- https://en.wikipedia.org/wiki/Industrial_robot
- https://education.vex.com/stemlabs/workcell/stemlab/industrial-robotics/what-are-industrial-robots?lng=en
- Examples of robots, https://robots.ieee.org/
- https://21st-century-students.com/