

ROBOSTEM Project

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



Lesson Plan for Robotic Arm Introduction

Topic: Working servos with Potentiometers

Subject: Computer science, electrical fundamentals, Microcontrollers

Target Group: Students aged between 15 and 18

The students should be people that are learning about sciences, particularly aimed at

1. Physics
2. Computer Science
3. Mechatronics
4. Mechanical Engineering
5. IT

Objectives:

Obj1. To understand how a servo & potentiometer work

Obj2. To learn more about microcontroller programming

Obj3. To learn about closed loop control

Approach/Methodology used:

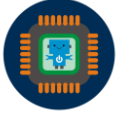
Project Based Learning, Small Group instructions, Research Oriented, Simulation

Means/Tools/Educational technology

Arduino Microcontroller, minimum of one potentiometer and one servo, computer for microcontroller programming, breadboard, jumper wires, 5V power supply (to supply servo)

Plan for work

| Time | Activities | Methods/ means |
|--------|---|--|
| 5 min | Explain what a potentiometer and a servo are | Presentation |
| 5 min | Explanation of the task and the aim of the project which is to set up the potentiometer as a controller for the servo axis. Leave wiring diagram on the board so they can follow it | Presentation |
| 35 min | Students are divided into groups of 2/3 to recreate the scenario. Those who succeed early can try adding more servos/potentiometers to the programming code/circuit | Project Learning, Research, Simulation |



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Assessment/Feedback:

The assessment is based on recreating the connection of the electrical devices and programming the microcontroller, extra points can be given for adding more to the circuit since it shows that the students understand what is happening overall.

Bibliography:

See IO2 Robotic Arm since there is an explanation of how to connect one servo/potentiometer & then multiply this.