Department of Mechanical Engineering
Academic Year 2021 – 2022 (Odd Semester)

Degree, Semester & Branch: VII Semester B.E Mechanical Engineering
Course Code & Title: ME8791 & Mechatronics
Name of the Faculty member (s): Mr.T.Selvasundar, AP/Mechanical,
S.Valai Ganesh, AP/Mechanical

Innovative Practice Description

- **Unit / Topic:** Unit I & V / Sensors and Actuators
- **Course Outcome:** CO1 & CO5
- **Topic Learning Outcome:** TLO1 & TLO14
- **Activity Chosen:** Sensors actuators interfacing using Tinker CAD
- **Justification:**

  Students can easily understand the concepts of sensors and how it will interface with actuators with the help of an arduino board. Using Tinker Cad students can run the model in a virtual manner so it will be easy to understand the concept.
- **Time Allotted for the Activity:** 20 Minutes (07.09.2021)
- **Details of the Implementation:**

  Tinker Cad was used to make a circuit virtually with all required components available in that platform itself. In this activity we used ultrasonic sensor which is used to activate the servo valve with the help of arduino.
- **CO – PO / PSO mapping:**

CO	PO 1	PO 2	PO 5	PO 12
CO 1 & 5	2	1	1	1

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	PO 1	PO 2	PO 5	PO 12
	PSO 2	PSO 2	PSO 2	PSO 2
Justification for correlation	Engineering Fundamentals and Specialization (Inter-disciplinary) required to interface sensors and Distinguish different	Identification of sensors based on working principle, area, range etc with the aid of engineering science, hence the outcome is	Modern software(s) and controllers are used to interface sensors for sensing physical environment and to	Changing Market needs, Short Product runs, product with quality could be obtained with Mechatronics system, hence the outcome is mapped

	types of actuators and choose it for suitable problem/case study, hence the outcome is mapped at level 2	mapped at level 1	build smart automation systems using Mechatronics, hence the outcome is mapped at level 1	at level 1

- **Images / Screenshot of the practice:**

- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***

    Students are very much excited because they can interface the sensor with a servo valve with the help of an arduino board virtually and they can make a block diagram in the Tinker CAD based on their interface so they can easily understand the concept.
  - ***Benefit of the practice:***

    Understand the different types of sensor interface with actuators used in Mechatronics systems.
  - ***Challenges faced in implementation:***

    Using Tinker CAD sensors were interface with a servo valve with the help of an arduino board is an easy task but in order to simulate the circuit, we have create the block diagram based on their circuit connection, if any error occurred during the making of block diagram the virtual simulation will not be run. so making of block diagram is very important and difficult for simulating the circuit virtually.

References:

- Tilak Thakur, " Mechatronics"Oxford Press Publisher, Latest Edition.
- **https://www.tinkercad.com/dashboard?type=circuits&collection=designs**

Signature of Faculty Member **HOD**