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

Degree, Semester & Branch: VII Semester B.E. Mechanical Engineering
Course Code & Title: ME8099 & Robotics
Name of the Faculty member (s): Dr.J.Jabinth, AP/Mechanical

Innovative Practice Description

- **Unit / Topic: Unit IV / Robot Kinematics using MATLAB**
- **Course Outcome:** CO4
- **Date**: **06.12.2021**
- **Topic Learning Outcome:** TLO10
- **Activity Chosen: Interactive learning using MATLAB**
- **Justification:** Students can learn the real time simulation of mechanisms using MATLAB.
- **Time Allotted for the Activity:** 45 minutes
- **Details of the Implementation:** In this Simulink, a module from MATLAB is used to design a compound pendulum made up of 2 links and also to track the response of link 1 and Link 2 using scope. The simulation is carried out under real time gravity, g =9.8 m/s^2 to study the chaotic response of pendulum.
- **CO – PO / PSO mapping:**

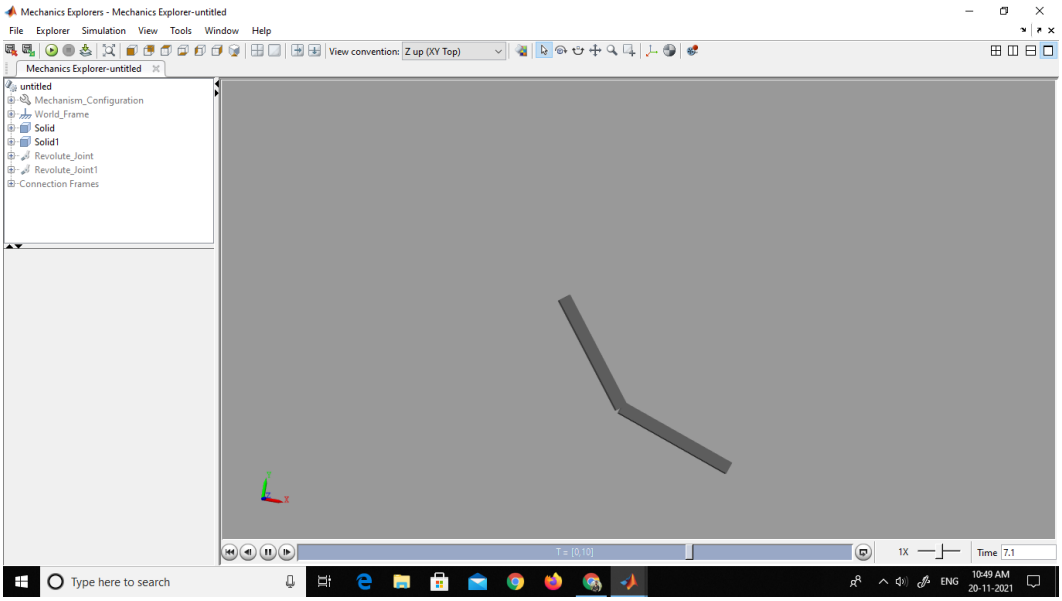
PO	PO1	PO2	PO3	PO5	PO12	PSO4
CO5	3	1	1	3	3	2

(1 – Low 2 – Moderate 3 – High)

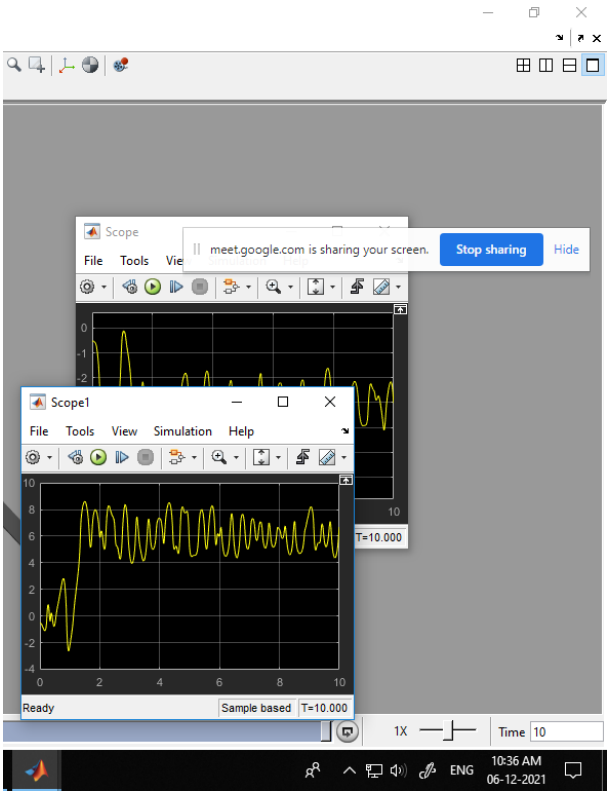
- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO5	PO12	PSO4
	3	2	3	2	3	2
Justification for correlation	Students must have fundamental knowledge in the topics learnt in subject	Students can understand the response of links when position under different angles	Based on simulation, students can develop new solutions.	For simulation MATLAB is used.	They can do the same simulation for many other mechanisms also.	Used simulation tool for simulating mechanism.

Using Simulink:



OUTPUT



- **Reflective Critique:**
  - ❖ ***Feedback of practice from students and other stakeholders:***
    Based on the feedback received from students, they told this method of teaching is very interesting.

- ***Benefit of the practice:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)
  Students can be able to simulate any kind of simple link type mechanisms using MATLAB
- ***Challenges faced in implementation:***
  - MATLAB installation in system.
  - Slow loading of system.
  - Software proficiency among students.

References:

- https://in.mathworks.com/?s_tid=gn_logo
- Khurmi, R.S., "Theory of Machines" 14th edition, S chand publications 2005.
- Rattan, S.S, "Theory of Machines", 4th Edition, Tata McGraw-Hill, 2014.
- Groover M.P., "Industrial Robotics -Technology Programming and Applications", McGraw Hill, 2001.

Signature of Faculty Member **HOD**