

# MECHATRONICS

NAME OF THE FACULTY - Smt. Satyabrata Sahoo, Lect. (ELECT) (65)  
Smt. Himanshu Patra, PTGF (MECH)

GOVT. POLYTECHNIC, NAYAGARH

## LESSON PLAN

<b>Discipline : Mechanical Engg.</b>	<b>Semester: 5<sup>th</sup> Sem (2023-24)</b>	<b>Name of the Teaching Faculty:</b> <b>Satyabrata Sahoo, Lect. (ELECT)</b> <b>Himanshu Patra, PTGF (MECH)</b>
Subject: Mechatronics	No. Of Class/Week: 4P/week	Semester From Date: 01/08/2023 to 30/11/2023 Total No of Weeks : 15 Weeks
<b>Week</b>	<b>Class Day</b>	<b>TOPICS TO BE COVERED</b>
1st	1st	<b>INTRODUCTION TO MECHATRONICS:</b> Definition, Advantages & disadvantages of Mechatronics.
	2nd	Application of Mechatronics
	3rd	Scope of Mechatronics in Industrial Sector.
	4th	Components of a Mechatronics System
2nd	1st	Importance of mechatronics in automation
	2nd	<b>SENSORS AND TRANSDUCERS:</b> Definition and classification of transducer
	3rd	Classification of Transducer
	4th	Electromechanical Transducers
3rd	1st	Transducers Actuating Mechanisms
	2nd	Sensors and its classifications
	3rd	Displacement & Positions Sensors
	4th	Velocity and Motion sensors
4th	1st	Force and Pressure sensors
	2nd	Temperature sensors
	3rd	Light sensors
	4th	Review class and Discussion
5th	1st	Assignment Evaluation & Class Test
	2nd	<b>MECHANICAL ACTUATORS:</b>
	3rd	Machine, Kinematic Link, Kinematic Pair
	4th	Mechanism, Slider crank Mechanism
6th	1st	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
	2nd	Belt & Belt drive

	3rd	Bearings
	4th	<b>Electrical Actuator:</b> Switches and relays
7th	1st	Robotic systems
		Solenoids
	2nd	D.C Motors
	3rd	A.C Motors
	4th	Stepper Motors, Specification and control of stepper motors
8th	1st	Servo Motors D.C & A.C
	2nd	Review class and Discussion
	3rd	<b>PROGRAMMABLE LOGIC CONTROLLERS(PLC)</b>
	4th	Introduction, Definition and Advantages of PLC
9th	1st	Introduction, Definition and Advantages of PLC
	2nd	Architecture basic internal structures
	3rd	Input/output Processing and Programming
	4th	Mnemonics
10th	1st	Master and Jump Controllers
	2nd	Review class and Discussion
	3rd	<b>ELEMENTS OF CNC MACHINES</b>
	4th	Introduction to Numerical Control of machines and CAD/CAM
11th	1st	NC machines
	2nd	CNC machine
	3rd	CAD and CAM
	4th	Software and hardware for CAD/CAM, Functioning of CAD/CAM system
12th	1st	Features and characteristics of CAD/CAM system
	2nd	Application areas for CAD/CAM
	3rd	<b>Introduction to CNC Machines,</b> Elements of CNC machines
	4th	Machine Structure
13th	1st	Guideways/Slide ways and its types, Factors of design of guideways
	2nd	Spindle drives
	3rd	Feed drive
	4th	Spindle and Spindle Bearings
14th	1st	Review class and Discussion
	2nd	<b>ROBOTICS:</b> Definition, Function and laws of robotics

	3rd	Types of industrial robots
	4th	Robotic systems
15th	1st	Advantages and Disadvantages of robots
	2nd	Review class
	3rd	Assignment Evaluation
	4th	Revision

Himanshu Padma  
 Lect (Mech Engg) CPTGF  
 9/07/2023