

Discipline : <b>MECHANICAL ENGG.</b>	Semester : <b>5th</b>	Name of the Teaching Faculty: <b>Shubhajit Biswal</b>
Subject: <b>MECHATRONICS (TH-4)</b>	No. of days/per week class allotted: <b>04</b>	Semester From date: <b>01.09.2020</b> To Date: <b>19.03.2021</b>  No. of Weeks: <b>15</b>
Week	Class Day	Theory / Practical Topics
1 <sup>ST</sup>	1 <sup>ST</sup>	<b>INTRODUCTION TO MECHATRONICS</b> Definition of Mechatronics
	2 <sup>ND</sup>	Advantages & disadvantages of Mechatronics
	3 <sup>RD</sup>	Application of Mechatronics
	4 <sup>TH</sup>	Scope of Mechatronics in Industrial Sector
2 <sup>ND</sup>	1 <sup>ST</sup>	Components of a Mechatronics System Importance of mechatronics in automation
	2 <sup>ND</sup>	<b>SENSORS AND TRANSDUCERS</b> Definition of Transducers.
	3 <sup>RD</sup>	Classification of Transducers
	4 <sup>TH</sup>	Classification of Transducers
3 <sup>RD</sup>	1 <sup>ST</sup>	Electromechanical Transducers
	2 <sup>ND</sup>	Transducers Actuating Mechanisms
	3 <sup>RD</sup>	Transducers Actuating Mechanisms
	4 <sup>TH</sup>	Displacement & Positions Sensors
4 <sup>TH</sup>	1 <sup>ST</sup>	Velocity, motion, force and pressure sensors
	2 <sup>ND</sup>	Velocity, motion, force and pressure sensors
	3 <sup>RD</sup>	Temperature and light sensors
	4 <sup>TH</sup>	<b>ACTUATORS-MECHANICAL, ELECTRICAL</b> Mechanical Actuators
5 <sup>TH</sup>	1 <sup>ST</sup>	Machine, Kinematic Link, Kinematic Pair
	2 <sup>ND</sup>	Mechanism, Slider crank Mechanism
	3 <sup>RD</sup>	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
	4 <sup>TH</sup>	Belt & Belt drive Bearings
6 <sup>TH</sup>	1 <sup>ST</sup>	Electrical Actuator
	2 <sup>ND</sup>	Switches and relay
	3 <sup>RD</sup>	Solenoid D.C Motors
	4 <sup>TH</sup>	A.C Motors Stepper Motors
7 <sup>TH</sup>	1 <sup>ST</sup>	Specification and control of stepper motors Servo Motors D.C & A.C
	2 <sup>ND</sup>	<b>PROGRAMMABLE LOGIC CONTROLLERS(PLC)</b> Introduction
	3 <sup>RD</sup>	Advantages of PLC
	4 <sup>TH</sup>	Advantages of PLC
8 <sup>TH</sup>	1 <sup>ST</sup>	Selection and uses of PLC

	2 <sup>ND</sup>	Selection and uses of PLC
	3 <sup>RD</sup>	Architecture basic internal structures
	4 <sup>TH</sup>	Architecture basic internal structures
9 <sup>TH</sup>	1 <sup>ST</sup>	Architecture basic internal structures
	2 <sup>ND</sup>	Input/output Processing and Programming
	3 <sup>RD</sup>	Input/output Processing and Programming
	4 <sup>TH</sup>	Input/output Processing and Programming
10 <sup>TH</sup>	1 <sup>ST</sup>	Mnemonics
	2 <sup>ND</sup>	Mnemonics
	3 <sup>RD</sup>	Master and Jump Controllers
	4 <sup>TH</sup>	Master and Jump Controllers
11 <sup>TH</sup>	1 <sup>ST</sup>	<b>ELEMENTS OF CNC MACHINES</b> Introduction to Numerical Control of machines and CAD/CAM
	2 <sup>ND</sup>	NC machines CNC machines
	3 <sup>RD</sup>	CAD/CAM CAD CAM
	4 <sup>TH</sup>	Software and hardware for CAD/CAM
12 <sup>TH</sup>	1 <sup>ST</sup>	Functioning of CAD/CAM system Features and characteristics of CAD/CAM system
	2 <sup>ND</sup>	Application areas for CAD/CAM
	3 <sup>RD</sup>	elements of CNC machines Introduction
	4 <sup>TH</sup>	Machine Structure
13 <sup>TH</sup>	1 <sup>ST</sup>	Guideways/Slide ways
	2 <sup>ND</sup>	Introduction and Types of Guideways
	3 <sup>RD</sup>	Factors of design of guideways
	4 <sup>TH</sup>	Drives
14 <sup>TH</sup>	1 <sup>ST</sup>	Spindle drives
	2 <sup>ND</sup>	Feed drive
	3 <sup>RD</sup>	Spindle and Spindle Bearings
	4 <sup>TH</sup>	<b>ROBOTICS</b> Definition, Function and laws of robotics 6.2Types of industrial robots
15 <sup>TH</sup>	1 <sup>ST</sup>	Definition, Function and laws of robotics 6.2Types of industrial robots

	2 <sup>ND</sup>	Robotic systems
	3 <sup>RD</sup>	Robotic systems
	4 <sup>TH</sup>	Advantages and Disadvantages of robots

**Learning Resources:**

01. Mechatronics by W. Bolton, Pearson Education India
02. Text book of Mechatronics by R.K Rajput, S.Chand
03. CAD/CAM/CIM by R.RADHAKRISHNA,S,SUBRAMANIAN, NEW AGEINTERNATIONALPVT.LTD
04. CAD/CAM by MIKELLGROVER