



GOVERNMENT POLYTECHNIC, KORAPUT
DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICALE NGG	Semester: 5TH	Name of the Teaching Faculty: MANOJA KUMAR SAHU.
Subject: MECHATRONICS	No. of days/per week class allotted: 04	Semester From date: 1/8/23 To Date: 30/11/23 . No. of Weeks: 15
COURSE OUTCOMES	CO1: Understand requirement of mechatronics and with their different application. CO2: Understand scope of mechatronics in industrial sector. CO3: Understand different component of mechatronics system with examples. CO4: Understand requirement of CNC machine and functions. CO5: Understand PLC and advantages of PLC. CO6: Understand requirement of robotics and use of robotics in engineering sector.	

WEEK	CLASS DAY	THEORY TOPIC
1ST	1	1.INTRODUCTION TO MECHATRONICS Definition of Mechatronics
	2	Advantages & disadvantages of Mechatronics Application of Mechatronics
	3	Scope of Mechatronics in Industrial Sector
	4	Components of a Mechatronics System
2ND	1	Importance of Mechatronics in automation
	2	2. SENSORS AND TRANSDUCERS Definition of Transducers
	3	Classification of Transducers
	4	Electromechanical Transducers
3RD	1	Transducers Actuating Mechanisms
	2	Transducers Actuating Mechanisms
	3	Displacement & Positions Sensors
	4	Displacement & Positions Sensors
4TH	1	Velocity, motion, force and pressure sensors
	2	Velocity, motion, force and pressure sensors
	3	Temperature and light sensors.
	4	3. ACTUATORS-MECHANICAL, ELECTRICAL Mechanical Actuators Machine, Kinematic Link, Kinematic Pair
5TH	1	Mechanism, Slider crank Mechanism
	2	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
	3	Belt & Belt drive Bearings
	4	Electrical Actuator Switches and relay
6TH	1	Switches and relay Solenoid
	2	D.C Motors A.C Motors
	3	Stepper Motors
	4	Specification and control of stepper motors
7TH	1	Servo Motors D.C & A.C
	2	4. PROGRAMMABLE LOGIC CONTROLLERS(PLC) Introduction

8 TH	3	PLC Definition
	4	Advantages of PLC
	1	Selection and uses of PLC
	2	Selection and uses of PLC
	3	Architecture basic internal structures
9 TH	4	Architecture basic internal structures
	1	Input/output Processing and Programming
	2	Input/output Processing and Programming
	3	Mnemonics
10 TH	4	ASSIGNMENT
	1	Master and Jump Controllers
	2	Element of CNC machines.
	3	Introduction to Numerical Control of machines and CAD/CAM
11 TH	4	QUIZ TEST
	1	NC machines CNC machines
	2	CAD
	3	CAM
12 TH	4	Software and hardware for CAD/CAM
	1	Functioning of CAD/CAM system
	2	Features and characteristics of CAD/CAM system
	3	Application areas for CAD/CAM
13 TH	4	Introduction of elements of CNC machines
	1	Machine Structure
	2	Guide ways /Slide ways
	3	Introduction and Types of Guide ways
14 TH	4	Factors of design of guide ways
	1	Drives Spindle drives
	2	Spindle drives Feed drive
	3	Spindle and Spindle Bearings
15 TH	4	6. ROBOTICS Definition, Function and laws of robotics
	1	Types of industrial robots
	2	Robotic systems
	3	Advantages and Disadvantages of robots
	4	REVISION

LEARNING RESOURCES:

01. *A textbook of Mechatronics by R.K Rajput, S.Chand Publisher
02. A text book of Mechatronics by W.Bolton.
03. A text book of CAD/CAM by R.Radhakrishna.
04. Design Data Handbook by S Md. Jalaludeen , Anuradha Publication


10/8/23

Sign. Of Faculty concerned


10/8/23
Sign. Of HOD I/C

Principal, GP Koraput