NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: TH-04 (MECHATRONICS)

Name Of The Faculty :- Er.PRADYUMNA KUMAR KHILAR & Er. D. OJHA
Branch :- Automobile Engineering **Semester :-** 5th
Academic Year : 2025-26 **Examination :-** 2025 (W)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Introduction to Mechatronics	5	8
2	Sensors and Transducers	10	14
3	Actuators-Mechanical, Electrical	10	13
4	Programmable logic controllers	15	17
5	Elements of CNC Machines	15	15
6	Robotics	5	8
	Total Period:	60	75

Sign of Faculty

Sign of H.O.D.

Name of the programme: Diploma in AUTOMOBILE ENGINEERING	Semester: 5TH	**Name of the Teaching Faculty:** Er.PRADYUMNA KUMAR KHILAR & Er. D. OJHA	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: TH-04	**Course Year:** Third Year	**No. of Classes Alloted Per Week :**	5
		Planned Classes Required to Complete the Course	75

Week	Class Day	Topics to be Covered
1st	1st	1.1 Definition of Mechatronics 1.2 Advantages & disadvantages of Mechatronics
	2nd	1.3 Application of Mechatronics
	3rd	1.4 Scope of Mechatronics in Industrial Sector
	4th	1.5 Components of a Mechatronics System
	5th	1.6 Importance of mechatronics in automation
2nd	1st	2.1Defination of Transducers
	2nd	2.2 Classification of Transducers
	3rd	2.3 Electromechanical Transducers
	4th	2.4 Transducers Actuating Mechanisms
	5th	2.5 Displacement Sensors
3rd	1st	2.5 Position Sensors
	2nd	2.6 Velocity, motion, force Sensors
	3rd	2.6 Pressure Sensors
	4th	2.7 Temperature Sensors
	5th	2.8 Light Sensors
4th	1st	3.1Mechanical Actuators
	2nd	3.1.1 Machine, Kinematic Link, Kinematic Pair
	3rd	3.1.2 Mechanism, Slider crank Mechanism
	4th	3.1.3 Gear Drive
	5th	Spur gear, Bevel gear, Helical gear
5th	1st	worm gear
	2nd	3.1.4 Belt & Belt drive
	3rd	3.1.4 Belt & Belt drive
	4th	3.1.5 Bearings
	5th	3.2 Electrical Actuator
6th	1st	3.2.1 Switches and relay ,3.2.2 Solenoid
	2nd	3.2.3 D.C Motors ,3.2.4 A.C Motors

Week	Class Day	Topics to be Covered
6th	3rd	3.2.5 Stepper Motors
	4th	3.2.6 Specification and control of stepper motors
	5th	3.2.7 Servo Motors D.C & A.C
7th	1st	3.2.7 Servo Motors D.C & A.C
	2nd	Revision of Unit III
	3rd	Revision of Unit III
	4th	4.1 Introduction about PLC
	5th	4.1 Introduction about PLC
8th	1st	4.2 Advantages of PLC
	2nd	4.2 Advantages of PLC
	3rd	4.3 Selection of PLC
	4th	4.3 Selection of PLC
	5th	4.3Uses of PLC
9th	1st	4.3Uses of PLC
	2nd	4.4 Architecture basic internal structures
	3rd	4.4 Architecture basic internal structures
	4th	4.5 Input/output Processing and Programming
	5th	4.5 Input/output Processing and Programming
10th	1st	4.5 Input/output Processing and Programming
	2nd	4.6 Mnemonics
	3rd	4.6 Mnemonics
	4th	4.7 Master Controllers
	5th	4.7 Master Controllers
11th	1st	4.7 Master Controllers
	2nd	4.7 Jump Controllers
	3rd	4.7 Jump Controllers
	4th	REVISION OF PROGRAMMABLE LOGIC CONTROLLERS(PLC)
	5th	5.1 Introduction to Numerical Control of machines and CAD/CAM
12th	1st	5.1.1 NC machines
	2nd	5.1.2 CNC machines
	3rd	5.1.3.CAD/CAM
	4th	5.1.4 Software and hardware for CAD/CAM
	5th	5.1.5 Functioning of CAD/CAM system
13th	1st	5.1.6 Features and characteristics of CAD/CAM system
	2nd	5.1.7 Application areas for CAD/CAM

Week	Class Day	Topics to be Covered
13th	3rd	5.2.1 elements of CNC machines Introduction
	4th	5.2.2 Machine Structure
	5th	5.2.3 Introduction and Types of Guideways
14th	1st	5.2.3 Factors of design of guideways
	2nd	5.2.4 Spindle drives
	3rd	5.2.4 Feed drive
	4th	5.2.5 Spindle
	5th	5.2.5 Bearings
15th	1st	6.1 Definition, Function and laws of robotics
	2nd	6.2 Types of industrial robots
	3rd	6.3 Robotic system,Robotics System
	4th	6.4 Advantages and Disadvantages of robots
	5th	6.4 Advantages and Disadvantages of robots,Robots used in varios industries

Sign of Faculty

Sign of H.O.D.