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

NIST POLYTECHNIC

LESSON PLAN

SUBJECT: TH-4 (MECHATRONICS)

Name Of The Faculty :- Er. Pradyumna Kumar Khilar and Er Dharmapada ojha
Branch :- Automobile Engineering **Semester :-** 5th
Session :- 2024-25 **Examination :-** 2024 (w)

CHAPTERWISE DISTRIBUTION OF PERIORDS

SLNO	NAME OF THE CHAPTER AS PER SYLLABUS	NO OF PERIODS AS PER SYLLABUS	NO OF PERIODS ACTUALLY NEEDED
1	INTRODUCTION TO MECHATRONICS	5	7
2	SENSORS AND TRANSDUCERS	10	12
3	ACTUATORS,MECHANICAL ,ELECTRICAL	15	16
4	PROGRAMMABLE LOGIC CONTROLLERS	12	14
5	ELEMENTS OF CNC MACHINES	13	13
6	ROBOTICS	5	8
	TOTAL PERIOD	60	72

29/06/2024 29.06.24
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DISCIPLIN: AUTOMOBILE ENGINEERING	SEMESTER: 5TH	**Name of the Teaching Faculty:** Er.Pradyumna Kumar Khilar and Er. Dharmapada Ojha	
		SESSION:2024-25	**EXAMINATION:**2024(W)

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
2nd	1st	1.5 Components of a Mechatronics System
	2nd	1.6 Importance of mechatronics in automation
	3rd	1.6 Importance of mechatronics in automation
	4th	**2.0 SENSORS AND TRANSDUCERS** 2.1 Defination of Transducer
3rd	1st	2.2 Classification of Transducer
	2nd	2.3 Electromechanical Transducers
	3rd	2.4 Transducers Actuating Mechanisms
	4th	2.4 Transducers Actuating Mechanisms
4th	1st	2.5 Displacement &Positions Sensors
	2nd	2.5 Displacement &Positions Sensors
	3rd	2.6 Velocity, motion, force and pressure sensors.
	4th	2.6 Velocity, motion, force and pressure sensors.
5th	1st	2.7 Temperature and light sensors.
	2nd	2.7 Temperature and light sensors.
	3rd	2.7 Temperature and light sensors.
	4th	**3.1.1 Machine, Kinematic Link, Kinematic Pair** 3.1.2 Mechanism, Slider crank Mechanism
6th	1st	3.1.1 Machine, Kinematic Link, Kinematic Pair 3.1.2 Mechanism, Slider crank Mechanism
	2nd	3.1.1 Machine, Kinematic Link, Kinematic Pair 3.1.2 Mechanism, Slider crank Mechanism
	3rd	3.1.3 Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
	4th	3.1.3 Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
7th	1st	3.1.4 Belt and belt drive
	2nd	3.1.4 Belt and belt drive
	3rd	3.1.5 Bearings
	4th	3.1.5 Bearings
8th	1st	3.2 Electrical Actuator 3.2.1 Switches and relay
	2nd	3.2 Electrical Actuator 3.2.1 Switches and relay

Week	Class Day	Topics to be covered
8th	3rd	3.2.2 Solenoid 3.2.3 D.C Motors
	4th	3.2.2 Solenoid 3.2.3 D.C Motors
9th	1st	3.2.4 A.C Motors
	2nd	3.2.6 Specification and control of stepper motors
	3rd	3.2.7 Servo Motors D.C & A.C
	4th	**4.0 PROGRAMMABLE LOGIC CONTROLLERS(PLC)**
10th	1st	4.0 PROGRAMMABLE LOGIC CONTROLLERS(PLC)
	2nd	4.1 Introduction 4.2 Advantages of PLC
	3rd	4.1 Introduction 4.2 Advantages of PLC
	4th	4.3 Selection and uses of PLC
11th	1st	4.3 Selection and uses of PLC
	2nd	4.4 Architecture basic internal structures
	3rd	4.4 Architecture basic internal structures
	4th	4.5 Input/output Processing and Programming
12th	1st	4.5 Input/output Processing and Programming
	2nd	4.6 Mnemonics
	3rd	4.6 Mnemonics
	4th	4.7 Master and Jump Controllers
13th	1st	4.7 Master and Jump Controllers
	2nd	**INTERNAL ASSESMENT**
	3rd	**INTERNAL ASSESMENT**
	4th	**5.0 ELEMENTS OF CNC MACHINES**
14th	1st	5.1 Introduction to Numerical Control of machines and CAD/CAM
	2nd	5.1.1 NC machines 5.1.2 CNC machines
	3rd	5.1.3.CAD/CAM 5.1.3.1 CAD
	4th	5.1.3.CAD/CAM 5.1.3.1 CAD
15th	1st	5.1.3.3 Software and hardware for CAD/CAM 5.1.3.4 Functioning of CAD/CAM system
	2nd	5.1.3.4 Features and characteristics of CAD/CAM system
	3rd	5.2 elements of CNC machines
	4th	5.2.1 Introduction 5.2.2 Machine Structure 5.2.3 Guideways/Slide ways
16th	1st	5.2.3.1 Introduction and Types of Guideways 5.2.3.2 Factors of design of guideways

Week	Class Day	Topics to be covered
16th	2nd	5.2.4 Drives
	3rd	5.2.4.1 Spindle drives 5.2.4.2 Feed drive
	4th	5.2.5 Spindle and Spindle Bearings
17th	1st	**6.0 ROBOTICS**
	2nd	6.2Types of industrial robots
	3rd	6.2Types of industrial robots
	4th	6.3 Robotic systems
18th	1st	6.3 Robotic systems
	2nd	6.4 Advantages and Disadvantages of robots
	3rd	6.4 Advantages and Disadvantages of robots
	4th	Revision

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