



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



LESSON PLAN

SUBJECT: TH-4(MECHATRONICS)

CHAPTERWISE DISTRIBUTION OF PERIODS

SLNO	NAME OF THE CHAPTER AS PER SYLLABUS	NO OF SYLLABUS AS PER SYLLABUS	NO OF PERIODS ACTUALLY NEEDED
1	INTRODUCTION TO MECHATRONICS	5	5
2	SENSORS AND TRANSDUCERS	10	12
3	ACTUATORS,MECHANICAL ,ELECTRICAL	15	16
4	PROGRAMMABLE LOGIC CONTROLLERS	12	12
5	ELEMENTS OF CNC MACHINES	13	13
6	ROBOTICS	5	4
	TOTAL PERIOD	60	62

DISCIPLIN: MECHANICAL ENGINEERING	SEMESTER: 5TH	Name of the Teaching Faculty: Er.Debashis Biswal and Er. Dharmapada Ojha	
		SESSION:2023-24	EXAMINATION:2023(W)
Week	Class Day	Theory / Practical Topics	
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	1.6 Importance of mechatronics in automation	
	2nd	2.0 SENSORS AND TRANSDUCERS 2.1 Defination of Transducer	
	3rd	2.2 Classification of Transducer	
	4th	2.3 Electromechanical Transducers	
3rd	1st	2.4 Transducers Actuating Mechanisms	
	2nd	2.4 Transducers Actuating Mechanisms	
	3rd	2.5 Displacement &Positions Sensors	
	4th	2.5 Displacement &Positions Sensors	
4th	1st	2.6 Velocity, motion, force and pressure sensors.	
	2nd	2.6 Velocity, motion, force and pressure sensors.	
	3rd	2.7 Temperature and light sensors.	
	4th	2.7 Temperature and light sensors.	
5th	1st	2.7 Temperature and light sensors.	
	2nd	3.1.1 Machine, Kinematic Link, Kinematic Pair 3.1.2 Mechanism, Slider crank Mechanism	
	3rd	3.1.1 Machine, Kinematic Link, Kinematic Pair 3.1.2 Mechanism, Slider crank Mechanism	
	4th	3.1.1 Machine, Kinematic Link, Kinematic Pair 3.1.2 Mechanism, Slider crank Mechanism	
6th	1st	3.1.3 Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear	
	2nd	3.1.3 Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear	
	3rd	3.1.4 Belt and belt drive	

Week	Class Day	Theory / Practical Topics
6 th	4 th	3.1.4 Belt and belt drive
7 th	1 st	3.1.5 Bearings
	2 nd	3.1.5 Bearings
	3 rd	3.2 Electrical Actuator 3.2.1 Switches and relay
	4 th	3.2 Electrical Actuator 3.2.1 Switches and relay
8 th	1 st	3.2.2 Solenoid 3.2.3 D.C Motors
	2 nd	3.2.2 Solenoid 3.2.3 D.C Motors
	3 rd	3.2.4 A.C Motors 3.2.5 Stepper Motors
	4 th	3.2.6 Specification and control of stepper motors
9 th	1 st	3.2.7 Servo Motors D.C & A.C
	2 nd	4.0 PROGRAMMABLE LOGIC CONTROLLERS(PLC)
	3 rd	4.0 PROGRAMMABLE LOGIC CONTROLLERS(PLC)
	4 th	4.1 Introduction 4.2 Advantages of PLC
10 th	1 st	4.3 Selection and uses of PLC
	2 nd	4.4 Architecture basic internal structures
	3 rd	4.4 Architecture basic internal structures
	4 th	4.5 Input/output Processing and Programming
11 th	1 st	4.5 Input/output Processing and Programming
	2 nd	4.6 Mnemonics
	3 rd	4.6 Mnemonics
	4 th	4.7 Master and Jump Controllers
12 th	1 st	4.7 Master and Jump Controllers
	2 nd	INTERNAL ASSESMENT
	3 rd	INTERNAL ASSESMENT
	4 th	5.0 ELEMENTS OF CNC MACHINES
13 th	1 st	5.1 Introduction to Numerical Control of machines and CAD/CAM
	2 nd	5.1.1 NC machines 5.1.2 CNC machines

Week	Class Day	Theory / Practical Topics
13 th	3 rd	5.1.3.CAD/CAM 5.1.3.1 CAD
	4 th	5.1.3.CAD/CAM 5.1.3.1 CAD
14 th	1 st	5.1.3.3 Software and hardware for CAD/CAM 5.1.3.4 Functioning of CAD/CAM system
	2 nd	5.1.3.4 Features and characteristics of CAD/CAM system 5.1.3.5 Application areas for CAD/CAM
	3 rd	5.2 elements of CNC machines
	4 th	5.2.1 Introduction 5.2.2 Machine Structure 5.2.3 Guideways/Slide ways
15 th	1 st	5.2.3.1 Introduction and Types of Guideways 5.2.3.2 Factors of design of guideways
	2 nd	5.2.4 Drives
	3 rd	5.2.4.1 Spindle drives 5.2.4.2 Feed drive
	4 th	5.2.5 Spindle and Spindle Bearings
16 th	1 st	6.0 ROBOTICS 6.1 Defination,Function and Laws of robotics
	2 nd	6.2Types of industrial robots
	3 rd	6.3 Robotic systems
	4 th	6.4 Advantages and Disadvantages of robots

