LESSON PLAN 2023-24

SUBJECT :MECHATRONICS (5TH SEM)

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Class No.	Topic	Subtopics	Teaching Aids/Activities
1	Introduction to Mechatronics	Definition, Advantages & Disadvantages	PPT, Videos of Mechatronic systems
2		Applications, Scope	Case study discussions
3		Components of Mechatronics System	Diagrams, Group activity
4		Importance in Automation	Seminar presentation
5	Sensors & Transducers	Definition, Classification	Charts, Component demo
6		Electromechanical Transducers	Hands-on with sensors
7		Transducers Actuating Mechanism	Physical models
8		Displacement & Position Sensors	Sensor kit demo
9		Velocity & Motion Sensors	Practical test setup
10		Force & Pressure Sensors	Lab experiment
11		Temperature & Light Sensors	Sensor interfacing demo
12		Sensor Selection & Comparison	Chart-based comparison
13	Mechanical Actuators	Machine, Kinematic Link & Pair	Mechanism models, Diagrams
14		Mechanism, Slider Crank	Physical working models
15		Gear Drives: Spur, Bevel, Helical, Worm	Gear samples, Animations
16		Belt & Belt Drive	Open lab: Belt system demo
17		Bearings: Types & Applications	Sample bearings & mounting demo
18	Electrical Actuators	Switches, Relays, Solenoids	Electrical lab kit
19		DC Motors: Operation and Use	Demo with DC motor
20		AC Motors: Types and Working	Lab demo on AC motors
21		Stepper Motors: Spec, Control	Arduino interfacing
22		Servo Motors: DC & AC	Simulation + hardware setup
23		Comparison and Selection	Tabular comparison
24	Introduction to PLCs	Definition, Advantages	PPT and video tutorial
25		Applications and Selection Criteria	Industrial case studies
26		Architecture & Internal Structure	Diagram-based explanation
27		I/O Processing, Programming Basics	Simulator demo
28		Mnemonics	Worksheets
29		Master & Jump Controllers	Lab simulation
30		Practice: Write simple PLC programs	Ladder logic exercises
31		Intro to NC, CNC, CAD/CAM	Videos + models

32	Elements of CNC Machines	NC vs CNC, CAD vs CAM	Tabular comparison
33		CAD/CAM Software & Hardware	System demo
34		CAD/CAM System Functioning	Flowchart explanation
35		Features & Applications	Group discussion
36		Machine Structure	Cut-section models
37		Guideways: Types and Design Factors	Slideway demo
38		Drive Systems: Spindle, Feed	Sample drive setups
39		Spindles & Bearings	Lab visit
40		CNC Element Integration	Review activity
41	Robotics	Definition, Function, Laws	Videos of industrial robots
42		Types of Industrial Robots	Charts, Videos
43		Robotic Systems	Block diagram explanation
44		Advantages & Disadvantages	SWOT analysis
45		Case Study on Industrial Use	Group work
46	Revision	Chapters 1 & 2	Quiz + Discussion
47	Revision	Chapters 3 & 4	Q&A, Practice Questions
48	First Internal Assessment	Chapters 1 to 4	Test paper
49	PLC Programming Practice	Advanced Ladder Logic	Simulation lab
50	CAD/CAM Software Lab	Drawing and G-code generation	Lab session
51	CNC Machining Demo	Toolpath Simulation	CNC trainer machine demo
52	Sensor-Actuator Integration	Sensor input to actuator control	Arduino/PLC interface project
53	Robotics Motion Control	Interfacing and movement programming	Lego Mindstorms or equivalent kits
54	Mini Project Work – I	Topic Selection & Planning	Group work with mentor guidance
55	Mini Project Work – II	Implementation	Working on prototype
56	Mini Project Work – III	Testing & Debugging	Lab-based
57	Project Presentation	PPT + Demo	Peer evaluation
58	Comprehensive Revision	All Chapters	Mind maps, Recap notes
59	Pre-Final Test	Full Syllabus	Model Test
60	Final Preparation & QA	Important Questions, Strategy	Doubt-clearing session