

# LESSONPLAN

## DEPARTMENT OF MECHANICAL ENGINEERING

### Sai Institute of Technological Science, Choudwar, Cuttack

**SUBJECT:** Mechatronics

**Periods:** 4 per week

**SEMESTER:** 5th

**NAME OF FACULTY:** S.SUBUDHIRAY LECT (MT)

**No. of weeks:** 15

FROM :01/08/2023-23/11/2023

<b>Week</b>	<b>ClassDay</b>	<b>Theory/Practical Topics</b>
1st	1 <sup>st</sup>	Introduction to mechatronics
	2 <sup>nd</sup>	Discussion about Definition of Mechatronics and its Advantages & disadvantages
	3 <sup>rd</sup>	Scope of Mechatronics in Industrial Sector
	4 <sup>th</sup>	Discussion about Application of Mechatronics
2 <sup>nd</sup>	1 <sup>st</sup>	Discussion about Components of a Mechatronics System
	2 <sup>nd</sup>	Importance of mechatronics in automation
	3 <sup>rd</sup>	Definition of Transducers
	4 <sup>th</sup>	Classification of Transducers
3 <sup>rd</sup>	1 <sup>st</sup>	Electromechanical Transducers
	2 <sup>nd</sup>	Transducers Actuating Mechanisms
	3 <sup>rd</sup>	Displacement & Positions Sensors
	4 <sup>th</sup>	Velocity, motion, force and pressure sensors
4 <sup>th</sup>	1 <sup>st</sup>	Temperature and light sensors
	2 <sup>nd</sup>	Mechanical Actuators
	3 <sup>rd</sup>	Machine, Kinematic Link
	4 <sup>th</sup>	Kinematic Pair, Assignment given to the students
5 <sup>th</sup>	1 <sup>st</sup>	Mechanism, Slider crank Mechanism
	2 <sup>nd</sup>	Gear Drive, Spur gear, Bevel gear
	3 <sup>rd</sup>	Helical gear, worm gear
	4 <sup>th</sup>	Belt & Belt drive, Submission of Assignments.
6 <sup>th</sup>	1 <sup>st</sup>	Open belt drive, prove the length of open belt drive
	2 <sup>nd</sup>	Close belt drive, Derive the length of Cross belt drive
	3 <sup>rd</sup>	Bearings, Various types of bearings and its uses
	4 <sup>th</sup>	Electrical Actuator, Switches and relay and its uses
7 <sup>th</sup>	1 <sup>st</sup>	Question Answer discussion with students.
	2 <sup>nd</sup>	Solenoid, Discussion about different types of switches.
	3 <sup>rd</sup>	D.C Motors and where D.C motors are used
	4 <sup>th</sup>	A.C Motors and its uses
8 <sup>th</sup>	1 <sup>st</sup>	Stepper Motors, examples of stepper motor
	2 <sup>nd</sup>	Specification and control of stepper motors
	3 <sup>rd</sup>	A.C servomotors, D.C servomotors
	4 <sup>th</sup>	Doubt clearing class.
9 <sup>th</sup>	1 <sup>st</sup>	Introduction to programmable logic controller
	2 <sup>nd</sup>	Advantages of PLC
	3 <sup>rd</sup>	Selection and uses of PLC
	4 <sup>th</sup>	Architecture basic internal structures
10 <sup>th</sup>	1 <sup>st</sup>	Input/output Processing and Programming
	2 <sup>nd</sup>	Mnemonics, Master and Jump Controllers
	3 <sup>rd</sup>	Revision previous year Questions.

11 <sup>th</sup>	1 <sup>st</sup>	Introduction to Numerical Control of machines and CAD/CAM
	2 <sup>nd</sup>	NC machines
	3 <sup>rd</sup>	Block diagram of N.C machines,
	4 <sup>th</sup>	Elements of N.C machines
12 <sup>th</sup>	1 <sup>st</sup>	CAD/CAM
	2 <sup>nd</sup>	Software and hardware for CAD/CAM
	3 <sup>rd</sup>	Functioning of CAD/CAM system
	4 <sup>th</sup>	Features and characteristics of CAD/CAM system
13 <sup>th</sup>	1 <sup>st</sup>	Application areas for CAD/CAM
	2 <sup>nd</sup>	CNC machines, elements of CNC machines
	3 <sup>rd</sup>	Machine Structure Guide ways/Slide ways, Practicing simple Programming of Lathe.
	4 <sup>th</sup>	Introduction and Types of Guideways
14 <sup>th</sup>	1 <sup>st</sup>	Factors of design of guideways/Drives
	2 <sup>nd</sup>	Spindle drives, Feed drive, discussion about programming
	3 <sup>rd</sup>	Spindle and Spindle Bearings
	4 <sup>th</sup>	Definition of Robotics
15 <sup>th</sup>	1 <sup>st</sup>	Function and Laws of Robotics
	2 <sup>nd</sup>	Types of industrial robots and its Advantages and Disadvantages
	3 <sup>rd</sup>	What is Robotic systems and its application in Industry.
	4 <sup>th</sup>	Doubt clearing and revision.