

BLACK DIAMOND SCHOOL OF ENGINEERING, JHARSUGUDA

LESSON PLAN

Session (2022-2023)

Discipline: Mechanical Engineering	Semester: 5 th , Winter/2022	Name of the Teaching Faculty: Subrat Priyadarshi Majhi Lecturer
Subject: Mechatronics, Theory-04	No. of Days/Week: 04	Start Date: 14/09/2022 End Date: 21/01/2023

Week	Class Day	Theory/Practical Topics
1st	1st	INTRODUCTION TO MECHATRONICS: Definition, Advantages & disadvantages of Mechatronics.
	2nd	Application of Mechatronics, Importance of mechatronics in automation.
	3rd	Components of a Mechatronics System
	4th	<i>Review class and Discussion</i>
2nd	1st	ROBOTICS: Definition, Function and laws of robotics
	2nd	Types of industrial robots, Advantages, Disadvantages and Applications of robots
	3rd	Robotic systems
	4th	<i>Review class and Discussion</i>
3rd	1st	<i>Assignment Evaluation & Class Test</i>
	2nd	SENSORS AND TRANSDUCERS:
	3rd	Definition and classification of transducer
	4th	Classification of Transducer
4th	1st	Electromechanical Transducers
	2nd	Transducers Actuating Mechanisms
	3rd	Sensors and its classifications
	4th	Displacement & Positions Sensors
5th	1st	Velocity and Motion sensors
	2nd	Force and Pressure sensors.
	3rd	Temperature sensors
	4th	Light sensors

6th	1st	<i>Review class and Discussion</i>
	2nd	<i>Assignment Evaluation & Quiz Test</i>
	3rd	ELEMENTS OF CNC MACHINES: Introduction to Numerical Control of machines
	4th	NC machines
7th	1st	CNC machine
	2nd	CAD and CAM
	3rd	Software and hardware for CAD/CAM, Functioning of CAD/CAM system
	4th	Features and characteristics of CAD/CAM system, Application areas for CAD/CAM
8th	1st	<i>Review class and Discussion</i>
	2nd	Introduction to CNC Machines, Elements of CNC machines
	3rd	Machine Structure
	4th	Guideways/Slide ways and its types
9th	1st	Drives and types, Spindle drives
	2nd	Feed drive
	3rd	Spindle and Spindle Bearings
	4th	<i>Review class and Discussion</i>
10th	1st	<i>Class Test</i>
	2nd	PROGRAMMABLE LOGIC CONTROLLERS(PLC):
	3rd	Introduction, Definition and Advantages of PLC, Selection and uses of PLC
	4th	Architecture basic internal structures
11th	1st	Input/output Processing and Programming
	2nd	Mnemonics, Master and Jump Controllers
	3rd	<i>Review class and Discussion</i>
	4th	<i>Assignment Evaluation & Class Test</i>
12th	1st	MECHANICAL ACTUATORS:
	2nd	Machine, Kinematic Link, Kinematic Pair
	3rd	Mechanism, Slider crank Mechanism
	4th	Gear Drive, Spur gear, Bevel gear, Helical gear, worm gear
13th	1st	Belt & Belt drive
	2nd	Electrical Actuator: Switches and relays, Solenoids
	3rd	D.C Motors
	4th	A.C Motors
14th	1st	Stepper Motors, Specification and control of stepper motors
	2nd	Servo Motors D.C & A.C

	3rd	<i>Review class</i>
	4th	<i>Assignment Evaluation & Quiz Test</i>
15th	1st	<i>Class Test</i>
	2nd	<i>Revision</i>
	3rd	<i>Revision</i>
	4th	<i>Discussion of Previous Year Questions</i>

Signature of Concerned Teacher

HoD

**Department of
Mechanical Engineering**