

PNS SCHOOL OF ENGINEERING & TECHNOLOGY, MARSHAGHAI, KENDRAPARA
LESSON PLAN

DISCIPLINE-MECHANICAL, SEMESTER-4TH ,SUBJECT-TH:5(C)- MECHATRONICS

NAME OF THE FACULTY-Er. SANYASI SWAIN

	NO.OF HOURS ALLOTED per WEEK-4.5	NO. OF WEEKS REQUIRED-10
1ST	UNIT-1 Introduction to Mechatronics: Mechatronics; Importance of Mechatronics; Systems	
2ND	Mea- surement systems; Control systems and their types;	
3rd	Closed-loop control System; Automatic water level controller; Sequential controllers-washing m/c	
4th	Measurement System terminology	
5th	Displacement, Position & Proximity Sensors;	
6th	Velocity and Motion Sensors; Force Sensors;	
7th	Fluid Pressure Sensors; Flow Sensors	
8th	Liquid Level Sensors; Temperature Sensors	
9th	Light Sensors , ASSIGNMENT-I	
10th	Selection of Sensors.	
11th	UNIT-2 Mechanical Actuation Systems: Types of motion; Freedom and constraints;	
12th	Loading; Gear Train,Pawl & Ratchet	
13th	Belt & Chain drives;	
14th	Bearings: Selection, Ball & Roller bearings;	
15th	Mechanical aspects of motor selection, ASSIGNMENT -II	
16th	Electrical Actuation Systems: Switches & Relays	
17th	Solenoids	
18th	D.C Motors; A.C.Motors	
19th	Stepper Motors: Specifications and Control of stepper motors	
20th	Servomotors: D.C Servomotor and A.C Servomotor.	
21st	Pneumatic & Hydraulic Systems: Power supplies; DCV; PCV; Cylinders; Rotary actuators.	
22nd	UNIT-III : Introduction to Mathematical model; Mechanical System Building block	
23rd	Electrical System building blocks; Fluid System building blocks;	
24th	Thermal System building blocks	
25th	Engineering Systems: Rotational, Translational Systems; ElectroMechanical Sytsem	
26th	Hydro-Mechanical System	
27th	Input/Output Systems:: Interfacing; Input/output ports; Interface requirements;	
28th	Buffers, Hand- shaking, Polling and interrupts, Serial interfacing	
29th	Introduction to PIA; Serial communications interface ASSIGNMENT-III	
30th	UNIT-IV Programmable Logic Controller (PLC): Definition; Basic block diagram	
31st	Structure of PLC,Input/Output processing; PLC Programming: Ladder diagram,	
32nd	Latching and Sequencing; PLC mnemonics	
33rd	Timers; Internal relays and Counters	
34th	Shift registers; Master and Jump Controls; Data handling; Analog input/output;	

35th	Selection of PLC. ASSIGNMENT IV
36th	UNIT-V Design Examples & Advanced Applications in Mechatronics
37th	Traditional Vs Mechatronics designs
38th	Possible design solutions-Timed switch, Wind-screen wiper motion, Bath room scale
39th	Case studies of Mechatronics systems: A pick-and-place robot, Car park barrier,
40th	Car engine management system, Automatic camera and automatic washing machine
41st	Sensors for Condition Monitoring Systems of Production Systems:
42nd	Examples of Monitoring methods: Vibration monitoring, Temperature monitoring
43rd	Mechatronics control in automated manufacturing:
44th	Supervisory control in manufacturing inspection, Integration of heterogeneous systems
45th	ASSIGNMENT -V & PYQ DISCUSSION

Sanyase Shweta
Signature of Lecturer

BB
Signature of H.O.D
HEAD OF THE DEPARTMENT
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