SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

DEPARTMENT OF MECHATRONICS ENGINEERING

Staff In-Charge: **Prof.R.Sivabalakrishnan, AP/MC**
Semester: **V**
Academic Year**: 2014-2015 - Odd Semester**

Course: **Sensors and Signal Processing**
Class**: III Year B.E. MC**

LESSON PLAN

Sl. No.	Topic	Method of Instruction	No. of Periods	Book to be referred
UNIT I SCIENCE OF MEASUREMENT				
1	Units and Standards	Black board	1	R1, R2 & R3
2	Calibration techniques	Black board	1	R1, R2 & R3
3	Errors in Measurements	Black board	1	R1, R2 & R3
4	Generalized Measurement System	Black board	1	R1, R2 & R3
5	Static and dynamic characteristics of transducers	Black board	1	R1, R2 & R3
6	Generalized Performance of Zero Order and First Order Systems	Black board	2	R1, R2 & R3
7	Response of transducers to different time varying inputs	Black board	1	R1, R2 & R3
8	Classification of transducers	OHP	1	R1, R2 & R3
9	Revision and question paper discussion		1	
Unit I	*10*			
UNIT II				

MECHANICAL MEASUREMENTS				
1	Filled thermometer – Bimetallic thermometer	Black board	1	R1 & R3
2	Monometers – elastic transducers	Black board	1	R1 & R3
3	Bourdon gauge – bellows – diaphragm	Black board	1	R1 & R3
4	McLeod gauge, thermal conductivity gauge	Black board	1	R1 & R3
5	Ionization gauge	Black board	1	R1 & R3
6	Flow measurement: orifice, venture, nozzle, pilot tube	Black board	2	R1 & R3
7	Turbine flow meter	Black board	1	R1 & R3
8	Hot wire anemometer	Black board	1	R1 & R3
9	Revision & University QP Discussion		1	R1 & R3
Unit II	*10*			
UNIT III ELECTRICAL M				

EASUREMENTS				
1	Resistive transducers -Potentiometer	Black board	1	R2 & R4
2	RTD – Thermistor – Thermocouple	OHP	1	R2 & R4
3	Strain gauges – use in displacement	Black board	1	R2 & R4
4	Strain gauges – use in temperature, force measurement	Black board	2	R2 & R4
5	Inductive transducer – LVDT – RVDT use in displacement	Black board	1	R2 & R4
6	Capacitive transducer – Piezo-electric transducer	Black board	1	R2 & R4
7	Digital displacement transducers	Black board	1	R2 & R4
8	Resistive transducers -Potentiometer	OHP	1	R2 & R4
9	Revision & University QP Discussion		1	
Unit III	*10*			
UNIT IV SMARTSENSORS				
1	Radiation Sensors - Smart Sensors	Black board	1	R5
2	Film sensor	Black board	1	R5
3	MEMS & Nano-Sensors	Black board	2	R5
4	Applications - Automobile	OHP	1	R5
5	Aerospace	Black board	1	R5

6	Home appliances	Black board	1	R5
7	Manufacturing & Medical diagnostics	LCD & OHP	1	R5
8	Environmental Monitoring	LCD & OHP	1	R5
9	Revision & University QP Discussion		1	
Unit IV	*10*			
UNIT V SIGNAL CONDITIONING AND DATA ACQUISITION				
1	Introduction to signal conditioning	Black board	1	R4 & R5
2	Amplification	OHP	1	R4 & R5
3	Filtering	OHP	1	R4 & R5
4	Sample and Hold circuit	OHP	2	R4 & R5
5	Data Acquisition: Single channel	Black board	1	R4 & R5
6	Multi channel data acquisition	Black board	2	R4 & R5

7	Data logging	Black board	1	R4 & R5
8	Revision & University QP Discussion		1	
Unit V	*10*			

Total Hours: 45[Lecture] + 5[Revision] = 50

REFERENCES:

R1. E. O. Doebelin, "Measurement Systems – Applications and Design", Tata McGraw Hill, edition 1992.
R2. A. K. Sawhney, "A course in Electrical and Electronic Measurement and Instrumentation", Dhanpat Rai and Co (P) Ltd, 2004.
R3. Beckwith, Marangoni and Lienhard, "Mechanical Measurements", Addison – Wesley, 5th Edition, 2000.
R4. D. Roy Choudry, Sheil Jain, "Linear Integrated Circuits", New Age International Pvt. Ltd., 2000.
R5. Patranabis. D, "Sensors and Transducers", 2nd edition PHI, New Delhi, 2003.

Staff In-Charge **HOD** **Principal**