Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electronics and Communication Engineering

Lesson plan of faculty member for the academic year 2016–17

Class: III B Tech Branch-Section: ECE-C Semester: I

Subject: Electronic Measurements and Instrumentation Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date(s)
	UNIT-I Block Schematics of Measuring Systems	
1.	Introduction to subject, Block Schematics of Measuring Systems and applications.	14 June 2016
2.	Static Characteristics, Accuracy, Precision, Resolution, error and mathematical representation of error, %error, accuracy and precision. Numerical problems.	15 June 2016
3.	Types of Errors, Root Sum Squares Formula, Mean, Deviation from Mean, Average deviation and standard deviation. Problems.	17 June 2016
4.	Limiting error, Gaussian error and problems.	18 June 2016
5.	Tutorial (G2,G1,G3) - Problems related to Error,Deviation	13,15,16 June 2016
6.	Dynamic Characteristics, Repeatability, Reproducibility, Fidelity and Lag.	21 June 2016
7.	D'Arsonval meter	22 June 2016
8.	DC Voltmeter, Extension of range and loading effect problem.	24 June 2016
9.	DC Ammeter, Aryton shunt and problem	25 June 2016
10.	Tutorial (G2,G1,G3) - Problems related to Statistical Analysis	20,22,23 June 2016
11.	AC Voltmeter and AC current meter	28 June 2016
12.	True rms voltmeter	29 June 2016
13.	Ohmmeter series and shunt type.	1 July 2016
14.	Multimeter	2 July 2016
15.	Tutorial (G2,G1,G3) - Problems related to Loading effect	27,29,30 June 2016
16.	Meter protection and specifications of instruments.	5 July 2016
	UNIT-II Signal Analyzers	
17.	Introduction to Signal Analyzers- AF, HF Wave Analyzers	8 July 2016
18.	Harmonic Distortion & Heterodyne wave Analyzers	9 July 2016
19.	Tutorial (G2) - Revision	4 July 2016
20.	Spectrum Analyzers & Power Analyzers	12 July 2016
21.	Capacitance – Voltage Meters	13 July 2016
22.	Oscillators	15 July 2016
23.	Introduction to Signal Generators	16 July 2016
24.	Tutorial (G2,G1,G3) - Seminars on capacitance voltage meter	11,13 ,14 July 2016
25.	Pulse and Square Wave Generators & Function Generators	19 July 2016
26.	Arbitrary waveform Generators	20 July 2016

27.	AF, RF Generators & Sweep frequency Generators	22 July 2016
28.	Video Signal Generators and Specifications.	23 July 2016
29.	Tutorial(G2,G1,G3) - Discussion on advanced generators	18, 20, 21 July 2016
UNIT III-Oscilloscopes and Special purpose Oscilloscopes		
30.	Introduction to CRO and CRT.	26 July 2016
31.	Delay line	27 July 2016
32.	Vertical amplifier	29 July 2016
33.	Time base generator and sync circuit	30 July 2016
34.	Tutorial (G2,G1,G3) - Discussion on bits	25 ,27 ,28 July 2016
35.	High frequency considerations of CRO and CRO probes	2 August 2016
36.	Block Diagram of CRO and lissajious figures.	3 August 2016
37.	Dual Trace and Dual Beam CRO	5 August 2016
38.	Sampling CRO	6 August 2016
39.	Tutorial (G2,G1,G3) - Problems on lissajious figures	1,3,4 August 2016
40.	Storage Oscilloscope and DSO	16 August 2016
UNIT IV -Transducers		
41.	Introduction to Transducers and Classification	17 August 2016
42.	Strain Gauge (Bounded and un bounded)	19 August 2016
43.	Force and displacement transducer	20 August 2016
44.	Tutorial (G1,G3) - Seminar on classification of transducers based on RLC	17,18 August 2016
45.	Resistance Thermometer	23 August 2016
46.	Hotwire Anemometer	24 August 2016
47.	Thermocouple	26 August 2016
48.	Digital Temperature sensing system	27 August 2016
49.	Tutorial (G2,G1) - Discussion of bits	22,24 August 2016
50.	Magneto strictive Transducer	30 August 2016
51.	LVDT	31 Augustst2016
52.	Special Resistance Thermometer	2 September 2016
53.	Piezo electric transducer	3 September 2016
54.	Tutorial (G2,G1,G3) - Revision on overview of unit	29,31 Aug,1 September 2016
55.	variable capacitance Transducer	6 September 2016
56.	Synchros	7 September 2016
UNIT V - Bridges & Measurement of Physical Parameters		
57.	Introduction to Bridges and Wheat one Bridge (balanced)	9 September 2016
58.	Wheatstone bridge (unbalanced)	10 September 2016

59.	Tutorial (G1,G3) - Problems on wheat stone bridge	7 ,8 September 2016
60.	Unbalanced Wheatstone Bridge	13 September 2016
61.	Kelvin Bridge	14 September 2016
62.	Maxwell and Hay bridge	16 September 2016
63.	Schering Bridge	17 September 2016
64.	Tutorial (G1,G3) - Problems related to Hay bridge, Maxwell bridge and Kelvin bridge	14 ,15 Sept 2016
65.	Anderson bridge	20 September 2016
66.	Resonance bridge	21 September 2016
67.	Wagner earth connection	23 September 2016
68.	Types of detector	24 September 2016
69.	Tutorial (G2,G1,G3) - Problems related to Schering bridge and Anderson bridge	19,21,22 September 2016
70.	Measurement of physical parameters-Flow Measurement	27 September 2016
71.	Measurement of humidity and moisture	28 September 2016
72.	Measurement of velocity and force	1 October 2016
73.	Tutorial (G2,G1,G3) - Problems related to Resonance bridge	26,28,29 September 2016
74.	Temperature measurement	4 October 2016
75.	Pressure and High Pressure Measurement	28 October 2016
76.	Vacuum level	29 October 2016
77.	Tutorial (G2,G3) - Revision on Block diagrams	3,27 October 2016
78.	Data Acquisition System	1 November 2016
79.	Displacement Meter	2 November 2016
80.	Types of detector	4 November 2016
81.	Revision	5 November 2016
82.	Tutorial (G2,G1,G3) – Discussion of previous papers	31 October, 2,3 November 2016

TEXT BOOKS:

1. H.S. Kalsi, ‘Electronic instrumentation’, second edition, Tata McGraw Hill, 2004.
2. ‘Electronic Measurements and Instrumentation **’-** K. Lal Kishore, Pearson Education 2010.

REFERENCE BOOKS:

1. David A. Bell, ‘Electronic Instrumentation & Measurements’-2nd Edition, PHI, 1997.
2. A.D Helfrick and W.D. Cooper ‘Modern Electronic Instrumentation and Measurement Techniques’ -5 Edition, PHI, 2003.
3. Oliver and Cage, ‘Electronic Measurements’‘–ISE, McGrawHill, 1971.
4. ‘Industrial Instrumentation’**:** T.R. Padmanabham Springer 2009

Name and signature of the faculty: B Kiranmai ----

Name and signature of Head of the Department: Mrs. N Shribala ----