

# Bhoj Reddy Engineering College for Women: Hyderabad

## Department of Electronics and Communication Engineering

Lesson plan of faculty member for the academic year 2017–18

Class: III B Tech

Branch-Section: ECE-A

Semester: I

Subject: Electronic Measurements and Instrumentation

Lectures per week: 4+1 (Tutorial)

| Lecture Number   | Topics to be covered   | Date (s)                  |
|--|--|---------------------------|
| <b>UNIT – I: Block Schematics of Measuring Systems</b>           |  |                           |
| 1  | Introduction to subject, Block Schematics of Measuring Systems and applications. | 12 July 2017              |
| 2  | Static Characteristics, Accuracy, Precision, Resolution, Types of Errors         | 13 July 2017              |
| 3  | Gaussian error, Root Sum Squares Formula, Problems                               | 14 July 2017              |
| 4  | Dynamic Characteristics, Repeatability, Reproducibility, Fidelity and Lag.       | 15 July 2017              |
| 5  | Tutorial (G2,G3) - Problems related to Errors.                                   | 12,13 July 2017           |
| 6  | D'Arsonval meter, DC Voltmeter, Extension of range and loading effect.           | 19 July 2017              |
| 7  | DC Ammeter, Ayrton shunt, AC Voltmeter and AC current meter                      | 20 July 2017              |
| 8  | True rms voltmeter, Problems related to voltmeter, ammeter                       | 21 July 2017              |
| 9  | Ohmmeter series and shunt type   | 22 July 2017              |
| 10   | Tutorial (G1,G2,G3) - Problems related to DC and AC meters                       | 17, 19, 20 July 2017      |
| 11   | Multimeter, Meter protection and specifications of instruments.                  | 26 July 2017              |
| <b>UNIT-II Signal Analyzers</b>                                  |  |                           |
| 12   | Introduction to Signal Analyzers-AF, HF Wave Analyzers                           | 27 July 2017              |
| 13   | Harmonic Distortion & Heterodyne wave Analyzers                                  | 28 July 2017              |
| 14   | Spectrum Analyzers & Power Analyzers   | 29 July 2017              |
| 15   | Tutorial (G1,G2,G3)-Revision   | 24,26,27 July 2017        |
| 16   | Capacitance – Voltage Meters   | 02 August 2017            |
| 17   | Oscillators  | 03 August 2017            |
| 18   | AF,RF Signal Generators, Sweep Frequency Generators                              | 04 August 2017            |
| 19   | Pulse and Square Wave Generators & Function Generators                           | 05 August 2017            |
| 20   | Tutorial (G1,G2,G3)-Revision of Block Diagrams                                   | 31 July,02,03 August 2017 |
| 21   | Arbitrary waveform Generators  | 09 August 2017            |
| 22   | Video Signal Generators and Specification  | 10 August 2017            |
| <b>UNIT-III: Oscilloscopes and Special purpose Oscilloscopes</b> |  |                           |
| 23   | Introduction to CRO, CRT, Block Schematics of CRO                                | 11 August 2017            |
| 24   | Time Base Circuits, Lissajous Figures  | 12 August 2017            |
| 25   | Tutorial (G1,G2,G3)- Problems on lissajous figures                               | 07,09,10 August 2017      |
| 26   | High frequency considerations of CRO and CRO probes                              | 16 August 2017            |
| 27   | Delay Lines  | 17 August 2017            |
| 28   | Measurement of Time, Period and Frequency Specifications                         | 18 August 2017            |
| 29   | Dual Trace and Dual Beam CRO   | 19 August 2017            |
| 30   | Tutorial (G1,G2,G3)- Discussion on bits  | 16,17 August 2017         |
| 31   | Sampling Oscilloscopes and Storage Oscilloscopes                                 | 23 August 2017            |
| 32   | Digital Storage CROs   | 24 August 2017            |
| <b>UNIT-IV: Transducers</b>                                      |  |                           |
| 33   | Introduction to Transducers and Classification                                   | 26 August 2017            |
| 34   | Tutorial (G1,G2,G3)- Seminar on classification of transducers based on RLC       | 21,23,24 August 2017      |
| 35   | Strain Gauge (Bounded and un bounded)  | 30 August 2017            |
| 36   | Force and displacement transducer  | 31 August 2017            |
| 37   | Resistance Thermometer   | 01 September 2017         |
| 38   | Tutorial (G1,G2,G3)- Discussion of bits  | 28,30,31 August 2017      |

|   |   |                           |
|---|---|---------------------------|
| 39  | Hotwire Anemometer                                      | 09 September 2017         |
| 40  | Tutorial (G1)-Revision                                  | 04 September 2017         |
| 41  | LVDT  | 13 September 2017         |
| 42  | Thermocouples, Synchros                                 | 14 September 2017         |
| 43  | Special Resistance Thermometer                          | 15 September 2017         |
| 44  | Digital Temperature sensing system                      | 16 September 2017         |
| 45  | Tutorial (G1,G2,G3)-Overview of Unit                    | 11,13,14September 2017    |
| 46  | Piezo electric transducer                               | 21 September 2017         |
| 47  | variable capacitance Transducer                         | 22 September 2017         |
| 48  | Magneto Strictive Transducers                           | 23 September 2017         |
| 49  | Tutorial (G1,G3)- Revision                              | 18,21 September 2017      |
| <b>UNIT-V: Bridges &amp; Measurement of Physical Parameters</b> |   |                           |
| 50  | Introduction to Bridges and Wheat one Bridge (balanced) | 04 October 2017           |
| 51  | Wheatstone bridge (unbalanced)                          | 05 October 2017           |
| 52  | Kelvin Bridge   | 06 October 2017           |
| 53  | Maxwell Bridge  | 07 October 2017           |
| 54  | Tutorial (G2,G3) -Revision                              | 04,05 October 2017        |
| 55  | Measurement of physical parameters-Flow Measurement     | 11 October 2017           |
| 56  | Displacement Meters                                     | 12 October 2017           |
| 57  | Liquid level Measurement                                | 13 October 2017           |
| 58  | Measurement of humidity and moisture                    | 14 October 2017           |
| 59  | Tutorial (G1,G2,G3)- Problems on wheat stone bridge     | 09,11,12 October 2017     |
| 60  | Measurement of velocity and force                       | 19 October 2017           |
| 61  | Temperature measurement                                 | 20 October 2017           |
| 62  | Pressure and High Pressure Measurement                  | 21 October 2017           |
| 63  | Tutorial (G1,G3)- Revision                              | 16,19 October 2017        |
| 64  | Vacuum level  | 25 October 2017           |
| 65  | Data Acquisition System                                 | 26 October 2017           |
| 66  | Problems related to Maxwell bridge and Kelvin bridge    | 27 October 2017           |
| 67  | Problems on wheat stone bridge                          | 28 October 2017           |
| 68  | Tutorial (G1,G2,G3)- Discussion of previous papers      | 23,25,26 October 2017     |
| 69  | Revision of Unit-2                                      | 01 November 2017          |
| 70  | Revision of Unit-3                                      | 02 November 2017          |
| 71  | Revision of Unit-4                                      | 03 November 2017          |
| 72  | Tutorial (G1,G2,G3)- Discussion of previous papers      | 30 October,01,02 Nov 2017 |
| 73  | Tutorial (G1)- Revision                                 | 06 November 2017          |

#### TEXT BOOKS:

1. H.S. Kalsi, 'Electronic instrumentation', second edition, Tata McGraw Hill, 2004.
2. A.D Helfrick and W.D. Cooper 'Modern Electronic Instrumentation and Measurement Techniques'-5 Edition, PHI, 2003.

Name and signature of the faculty: T.Geetha

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