

**HARYANA COLLEGE OF TECHNOLOGY & MANAGEMANT,KAITHAL  
LESSON PLAN**

**IV<sup>th</sup> SEMESTER ELECTRONICS & COMMUNICATION ENGG**

**Course Handouts of ...Electronics Instruments and Measurements**

**Details regarding course plan**

**Course No :** ECE-202E

**Course Title :** Electronics Instrumentation and Measurements

**Instructor Incharge:** Er. Vinod Jale

<b>Sessional</b>	<b>:</b>	<b>50</b>	<b>Marks</b>
<b>Theory</b>	<b>:</b>	<b>100</b>	<b>Marks</b>
<b>Total</b>	<b>:</b>	<b>150</b>	<b>Marks</b>
<b>Time</b>	<b>:</b>	<b>3Hrs</b>	

**Text Books:**

A Course in Electrical and Electronics Measurements and Instrumentation: A.K. Sawhney;  
Dhanpat Rai & Sons.

**Reference Books**

1. Electronics Instrumentation and Measurement Techniques: Cooper W.D & Helfrick A.D.; PHI
2. Doebelin E.O., Measurement Systems: Application & Design, Mc Graw Hill.

### Lecture Schedule

Lecture	Topics	Remarks
1-3	MEASUREMENT AND ERROR: Functional elements and generalized configuration of a measuring Instrument.	
4-6	Characteristics of instruments, errors in measurements and their statistical analysis.	
7-9	MEASUREMENT OF RESISTANCE: Wheat stone bridge, Carey-Foster Bridge, Kelvin double bridge, Measurement of Insulation resistance.	
10-12	A-C BRIDGES: Maxwell Inductance bridge. Maxwell Inductance Capacitance Bridge.	
13-15	Anderson's Bridge, Hay's Bridge, De-Sauty's Bridge,	
16-18	Schering's bridge and Wein's bridge.	
19-21	Analog voltmeters and Potentiometers, Self balancing potentiometer and X-Y recorders	
22-24	Galvanometers - Oscillographs, Cathode - Ray Oscilloscopes, Magnetic Tape Recorders.	
25-27	ELECTRONIC INSTRUMENTS: Wave analyzer, Distortion meter: Q-meter. Measurement of Op-Amp parameters.	
28-30	DIGITAL INSTRUMENTS: Digital Indicating Instruments, Comparison with analog type, digital display methods, digital methods of time and frequency measurements, digital voltmeters.	
31-33	TRANSDUCERS: Classification of Transducers, Strain Gauge, Displacement Transducers - Capacitive Transducers, LVDT, Piezo-electric Transducers.	
34-36	Temperature Transducers - resistance thermometer, Thermocouples and Thermistors, Liquid level measurement Low pressure (vacuum) measurement.	
37-39	DATA ACQUISITION SYSTEMS: A to D and D to A converters, Analog and Digital Data Acquisition Systems	
40	Multiplexing, Spatial Encoders, Telemetry.	

