

hkr HOD Mechanic
Anil

Lesson Plan (for theory course)

Program Name	
Course Title	MEASUREMENT & METROLOGY
Course Code	MEPC205
Semester	3
Course Teacher	ER. Anil Sen

Evaluation Scheme

SrNo	Subject Code	Subject	Study Scheme	Total Study Hours	Credits	Evaluation Scheme	Total Marks
	MEPC205	M&M		04	03		60

References Books/Study Material 1. → Engg. Metrology by ; R.K. Jain

2. Engg. precision metrology → R.C. Gupta
3. A Hand book Industrial Metrology

Course Outcomes (Cos)

CO-1	Define accuracy, precision, calibration, sensitivity etc.
CO-2	The student will be able to measure various components of angle measurement
CO-3	The students will be able to measure various components of linear measurement.
CO-4	The students will be able to measure the geometrical dimensions of 1/- Thread and spigots.

Anil

Anil

Teaching Plan

Unit No.1

Introduction To Measurements

Sr.No.	Topic To Be Covered	Proposed Date	Actual Date	Remarks
1.	Definition of measurement; Significance of measurement	1 August 2026		
2.	Methods of measurements: Direct & Indirect	4 August 2026		
3.	Generalized measuring system	6 August 2026		
4.	Standards of measurements: Primary & Secondary; Factors influencing selection of measuring instruments	7 August 2026		
5.	Terms applicable to measuring instruments: Precision and Accuracy, Sensitivity and Repeatability, Range, Threshold, Hysteresis, calibration	11 August 2026		
6.	Errors in Measurements: Classification of errors, Systematic and Random error	13 August 2026		
7.	Introduction; Thread measurements: Thread gauge micrometer	14 August 2026		
8.	Angle measurements: Bevel protractor, Sine Bar	18 August 2026		
9.	Gauges: plain plug gauge, ring Gauge, snap gauge, limit gauge	20 August 2026		
10.	Comparators: Characteristics of comparators	21 August 2026		
11.	Types of comparators; Surface finish: Definition	22 August 2026		
12.	Terminology of surface finish	25 August 2026		
13.	Taly sur surface roughness tester	27 August 2026		
14.	Coordinating measuring machine	28 August 2026		



Unit No. 2

Transducers and Strain gauges

Sr.No.	Topic To Be Covered	Proposed Date	Actual Date	Remarks
1.	Introduction; Transducers	29 August 2026		
2.	Characteristics, classification of transducers	01 Sep. 2026		
3.	Strain Measurements	03 Sep. 2026		
4.	Strain gauge, Classification	05 Sep. 2026		
5.	mounting of strain gauges	08 Sep. 2026		
6.	Introduction; Force measurement	10 Sep. 2026		
7.	Introduction; Force measurement: Spring Balance	11 Sep. 2026		
8.	Introduction; Force measurement: Load cell	15 Sep. 2026		
9.	Torque measurement: Prony brake	17 Sep. 2026		
10.	Torque measurement: Eddy current	18 Sep. 2026		
11.	Torque measurement: Hydraulic dynamometer	19 Sep. 2026		
12.	Pressure measurement: McLeod gauge	22 Sep. 2026		

Unit No. 3

Applied Mechanical Measurements

Sr.No.	Topic To Be Covered	Proposed Date	Actual Date	Remarks
1.	Speed measurement: Classification of tachometers	24 Sep. 2026		
2.	Revolution counters	25 Sep. 2026		
3.	Eddy current tachometers	26 Sep. 2026		
4.	Displacement measurement: Linear variable Differential transformers (LVDT)	29 Sep. 2026		
5.	Flow measurement: Rotometers, Turbine meter	1 October 2026		
6.	Temperature measurement: Resistance thermometers, Optical Pyrometer	3 October 2026		
7.	Humidity measurement: hair hygrometer	6 October 2026		
8.	Density measurement: hydrometer	8 October 2026		
9.	Liquid level measurement, sight glass, Float gauge.	9 October 2026		

AR

Ans

Unit No.

4 Limits, Fits & Tolerances

Sr.No.	Topic To Be Covered	Proposed Date	Actual Date	Remarks
1.	Concept of Limits, Fits, and Tolerances	13 October 2026		
2.	Selective Assembly; Interchangeability	15 October 2026		
3.	Hole and Shaft Basis System, Taylor's Principle.	16 October 2026		
4.	Angular Measurement: Concept; Instruments for Angular Measurements	17 October 2026		
5.	Working and Use of Universal Bevel Protractor, Sine Bar, Spirit Level	22 October 2026		
6.	Principle of Working of Clinometers; Angle Gauges	23 October 2026		
7.	ISO grade and fit of thread, Errors in threads	24 October 2026		
8.	Measurement of different elements such as major diameter, minor diameter, effective diameter, pitch	24 October 2026		
9.	Two wire method, Thread gauge micrometer	25 October 2026		
10.	Working principle of floating carriage dial micrometer	27 October 2026		

Unit No. 5

Gear Measurement and Testing

Sr.No.	Topic To Be Covered	Proposed Date	Actual Date	Remarks
1.	Analytical and functional inspection.	30 October 2026		
2.	Rolling test	31 October 2026		
3.	Measurement of tooth thickness;	10 Nov. 2026		
4.	Gear tooth Vernier	12 Nov. 2026		
5.	Errors in gear such as backlash, run out, composite	13 Nov. 2026		
6.	Machinetool testing: Parallelism; Straightness; Squareness; Coaxiality; roundness; runout	17 Nov. 2026		
7.	Alignment testing of machine tools as per IS standard procedure.	19 Nov. 2026		

Am