Orissa School of Mining Engineering Keonjhar

Department of Mechanical Engineering

Lesson Plan w.e.f 01.07.2026-05 .11.2026

DISCIPLINE	SEMESTER	NAME OF THE FACULTY
MECHANICAL ENGG.	5TH	GEETANJALI MARDI
SUBJECT/CODE	NO. OF PERIODS ALLOTTED IN A WEEK : 03	SEMESTER W.E.F.: 01.07.2026
METROLOGY ANDMEASUREMENT TH-1		TO DATE : 05-11-2026
		NUMBER OF WEEKS : 15

LEARNING OUTCOMES-

After completion of the course, the students will be able to

CO1-Define accuracy, precision, calibration, sensitivity, repeatability and such relevant terms in metrology.

CO2- Distinguish between various types of errors.

CO3-Understand the principle of operation of an instrument and select suitable measuring device for a particular application.

CO4-Appreciate the concept of calibration of an instrument.

CO5-Analyze and interpret the data obtained from the different measurements processes and present it in the graphical form, statistical form.

Month	Period	Date	Topics to be Covered	Learning Outcome
JULY	1	01-07-2026	Introduction to measurements: Definition of measurement; Significance of measurement;	CO1
JULY	2	06-07-2026	Methods of measurements: Direct & Indirect; Generalized measuring system	CO1
JULY	3	06-07-2026	Standards of measurements: Primary & Secondary; Factors influencing selection of measuring instruments	CO1
JULY	4	08-07-2026	Terms applicable to measuring instruments: Precision and Accuracy, Sensitivity and Repeatability	CO1
JULY	5	13-07-2026	Range, Threshold, Hysteresis, calibration; Errors in Measurements: Classification of errors,Systematic and Random error	CO1, CO2, CO4:
JULY	6	13-07-2026	Measuring instruments: Introduction; Thread measurements: Thread gauge micrometer; Angle	CO3

			measurements	
AUGUST	7	15-07-2026	Bevel protractor, Sine Bar; Gauges: plain plug gauge, ring Gauge, snap gauge, limit gauge	CO3
AUGUST	8	20-07-2026	Cooperators: Characteristics of comparators, Types of comparators; Surface finish: Definition, Terminology of surface finish	CO3
AUGUST	9	20-07-2026	Surface finish: Definition, Terminology of surface finish	CO3
AUGUST	10	22-07-2026	Talysurf surface roughness tester; Co-ordinate measuring machine	CO3
AUGUST	11	27-07-2026	REVISION & QUESTION ANSWER DISCUSSION Monthly Test 1	CO1,CO2, CO3,CO4
AUGUST	12	27-07-2026	Transducers and Strain gauges: Introduction; Transducers: Characteristics,	CO3
AUGUST	13	29-07-2026	classification of transducers, two coil self-inductance transducer, Piezoelectric transducer;	CO3
AUGUST	14	03-08-2026	Strain Measurements: Strain gauge, Classification, mounting of strain gauges,	CO3
AUGUST	15	03-08-2026	Strain gauge rosettes-two and three elements. Measurement of force, torque, and pressure:	CO3
AUGUST	16	05-08-2026	Introduction; Force measurement: Spring Balance,	CO3
AUGUST	17	10-08-2026	Proving ring, Load cell; Torque measurement: Prony brake	CO3
AUGUST	18	10-08-2026	Eddycurrent,Hydraulic dynamometer	CO3
AUGUST	19	12-08-2026	Pressure measurement: Mcloed gauge.	CO3
AUGUST	20	17-08-2026	REVISION & QUESTION ANSWER DISCUSSION	CO1,CO2, CO3
SEPTEMBER	21	17-08-2026	Applied mechanical measurements: Speed measurement: Classification of tachometers, e	CO3
SEPTEMBER	22	19-08-2026	Revolution counters, Eddy current tachometers	CO3
SEPTEMBER	23	24-08-2026	Displacement measurement: Linear variable Differential transformers (LVDT);	CO3
SEPTEMBER	24	24-08-2026	Flow measurement: Rotometers, Turbine meter	CO3
SEPTEMBER	25	31-08-2026	Temperature measure ment: Resistance	CO3

			thermometers, Optical Pyrometer	
SEPTEMBER	26	31-08-2026	Miscellaneous measurements: Humidity measurement: hair hygrometer; Density measurement: hydrometer	CO3
SEPTEMBER	27	02-09-2026	Liquid level measurement: sight glass, Float gauge;	CO3
			1ST INTERNAL	
SEPTEMBER	28	07-09-2026	Biomedical measurement: Sphygmo monomet	CO3
SEPTEMBER	29	07-09-2026	REVISION & QUESTION ANSWER DISCUSSION	CO2,CO3
SEPTEMBER	30	09-09-2026	Unit-IV: Limits, Fits & Tolerances: Concept of Limits, Fits, and Tolerances;	CO3
OCTOBER	31	23-09-2026	Selective Assembly; Interchangeability; Hole and Shaft Basis System	CO3
OCTOBER	32	28-09-2026	Taylor's Principle; Design of Plug; Ring Gauges; IS 919-1993 (Limits, Fits & Tolerances, Gauges} IS 3477-1973;	CO3
OCTOBER	33	28-09-2026	concept of multi gauging and inspection. Angular Measurement: Concept	CO3
OCTOBER	34	30-09-2026	Instruments for Angular Measurements	CO3
OCTOBER	35	05-10-2026	Working and Use of Universal Bevel Protractor, Sine Bar, Spirit Level;	CO3
OCTOBER	36	05-10-2026	Principle of Working of Clinometers; Angle Gauges (With Numerical on Setting of Angle Gauges)	CO3,CO5
OCTOBER	37	07-10-2026	Screw thread Measurements: ISO grade and fits of thread;	CO3
OCTOBER	38	12-10-2026	Errors in threads; Pitch errors; Measurement of different elements such as major diameter, minordiameter, effective diameter, pitch;	CO2,CO3
OCTOBER	39	12-10-2026	Thread gauge micrometer; Working principle of floating carriage dial micrometer	CO3
OCTOBER	40	14-10-2026	REVISION & QUESTION ANSWER DISCUSSION Monthly Test 2	CO3,CO5
OCTOBER	41	21-10-2026	Internal Assessment 2	CO1,CO2, CO3,CO4, CO5

OCTOBER	42	26-10-2026	Gear Measurement and Testing: Analytical and functional inspection;	CO3
OCTOBER	43	26-10-2026	Rolling test; Measurement of tooth thickness (constant chord method);	CO3
OCTOBER	44	28-10-2026	Gear tooth vernier; Errors in gears such as backlash, runout, composite	CO2,CO3
			2ND INTERNAL	
NOVEMBER	45	02-11-2026	Machine tool testing: Parallelism; Straightness; Squareness	CO3
NOVEMBER	46 (EXTRA CLASS)	02-11-2026	Coaxiallity; roundness; run out;	CO3
NOVEMBER	47 (EXTRA CLASS)	04-11-2026	alignment testing of machine tools as per IS standard procedure.	CO3,CO4
NOVEMBER	49		VST-1	All CO
NOVEMBER	50		VST-2	ALL CO

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