R. K. Institute of Engineering and Technology

MECHANICAL ENGINEERING

SEMESTER : 5th (SEC-A)

FROM :01/07/2026 **TO :**05/11/2026

NAME OF THE FACULTY : Er. DEBASIS DASH

SUBJECT : Metrology and Measurement

TOTAL CLASS AVAILABLE IN SEMESTER: 45 nos

NO. OF PERIODS : 03/ WEEK

Class No.	Unit	Topic / Sub-topic	Teaching Method
1	I	Introduction to Measurement, Importance	Lecture
2	I	Methods of Measurement (Direct & Indirect)	Lecture + Discussion
3	I	Generalized Measurement System	PPT
4	I	Standards of Measurement (Primary & Secondary)	Lecture
5	I	Selection of Measuring Instruments	Demonstration
6	I	Accuracy, Precision, Sensitivity	Numerical
7	I	Repeatability, Range, Threshold, Hysteresis, Calibration	Lecture
8	I	Errors in Measurement & Classification	Problem Solving
9	I	Vernier Caliper & Micrometer	Demonstration
10	I	Gauges, Comparators, Surface Finish & CMM	Video + Revision
11	II	Introduction to Transducers	Lecture
12	II	Characteristics & Classification of Transducers	PPT
13	II	LVDT, Piezoelectric & Inductive Transducers	Demonstration
14	II	Strain Gauges & Applications	Lecture
15	II	Measurement of Force	Numerical
16	II	Measurement of Torque	Lecture
17	II	Measurement of Pressure	Demonstration
18	II	Measurement of Flow	Lecture
19	II	Revision & Tutorial	Discussion
20	II	Unit Test–I	Assessment
21	III	Speed Measurement & Tachometers	Lecture
22	III	Displacement Measurement (LVDT, Differential Transformer)	PPT
23	III	Flow Measurement (Rotameter, Turbine Meter)	Lecture

Class No.	Unit	Topic / Sub-topic	Teaching Method
24	III	Temperature Measurement (RTD, Thermocouple, Pyrometer)	Demonstration
25	III	Humidity & Density Measurement	Lecture
26	III	Liquid Level Measurement	Lecture
27	III	Biomedical Measurements	Seminar
28	III	Revision & Numerical Problems	Tutorial
29	IV	Limits, Fits & Tolerances	Lecture
30	IV	Hole Basis & Shaft Basis System	Numerical
31	IV	Taylor's Principle	Lecture
32	IV	Plug, Ring & Snap Gauges	Demonstration
33	IV	Angle Measurement & Instruments	Lecture
34	IV	Universal Bevel Protractor, Sine Bar	Demonstration
35	IV	Clinometers & Angle Gauges	Practical Demonstration
36	IV	Screw Thread Measurement	Numerical
37	IV	Floating Carriage Micrometer	Lecture
38	IV	Revision & Unit Test–II	Assessment
39	V	Gear Measurement & Inspection	Lecture
40	V	Gear Tooth Thickness Measurement	Numerical
41	V	Gear Errors (Backlash, Runout, Composite Error)	Lecture
42	V	Machine Tool Testing (Parallelism, Straightness)	Demonstration
43	V	Alignment Tests & IS Standards	Lecture
44	V	Complete Syllabus Revision	Discussion
45	All Units	Model Test, Doubt Clearing & Course Outcome Assessment	Assessment

D. Dash
Sign of Faculty

Sign of HOD

Sign of Principal

Principal
R.K INSTITUTE OF ENGG & TECH
KANTAPADA,NIALI, CUTTACK