

**DEPARTMENT OF PRECISION MANUFACTURING ENGINEERING**

**LESSON PLAN**

<b>Discipline: PME</b>	<b>Semester: 3rd</b>	<b>Name of the Teaching faculty: Suprava Behera</b>
<b>Subject-Engineering Metrology</b>	<b>No of Days/Week class allotted: 3</b>	<b>Semester from Date: 14.07.2025 To Date: 15.11.2025</b> <b>No of weeks: 15</b>
<b>SL.NO</b>	<b>Class/Day</b>	<b>TOPICS TO BE COVERED</b>
1	1st	Introduction to Metrology, definitions, types and need of inspection
	2nd	Terminologies used in Metrology.
	3rd	Methods of measurement
2	1st	Selection of instruments, measurement errors, units
	2nd	Measurement standards, calibration
	3rd	Statistical concepts in metrology
3	1st	Linear metrology: Steel rule, calipers
	2nd	Vernier caliper: parts ,types, working and Least Count,error
	3rd	Vernier height gauge: parts ,working
4	1st	Vernier depth gauge: parts , working
	2nd	Micrometers : parts ,working
	3rd	Universal caliper : parts ,working
5	1st	Interchangeability, selective assembly
	2nd	Limits, fit and tolerances
	3rd	Limit gauging, computer aided tolerancing
6	1st	Measurement of straightness, flatness
	2nd	Measurement of sureness,parallelism, roundness
	3rd	Measurement of cylindricity, non-contact profiling systems
7	1st	Measurement of surface finish: Introduction
	2nd	Terminology, specifying roughness on drawings
	3rd	Surface roughness parameters, factors affecting surface roughness
8	1st	Ideal surface roughness, roughness measurement methods
	2nd	Precautions in measurement
	3rd	Surface microscopy, surface finish software

9	1st	Screw thread metrology: Introduction
	2nd	Screw thread terminology
	3rd	Screw thread measurement
10	1st	Gear measurement: Introduction
	2nd	Types of gears
	3rd	Gear terminology, Errors in gears
11	1st	Advanced measurement of spur gear
	2nd	Taper measurement: definition, types
	3rd	Taper measurement: methods and applications
12	1st	Angle measurement: definition, types
	2nd	Angle measurement: methods and applications
	3rd	Radius measurement: definition, types
13	1st	Radius measurement: methods and applications
	2nd	Advanced measuring machines: CNC systems, Laser vision
	3rd	In-process gauging, 3D metrology, metrology software
14	1st	Nano technology instrumentation, stage position metrology, testing and certification services
	2nd	Optical system design, lens design, coating design
	3rd	Precision lens assembly techniques
15	1st	Complex opto mechanical assemblies
	2nd	Contact bonding and other joining technologies
	3rd	Probable question discussion

  
10.07.25  
FACULTY SIGNATURE