

<b>MECHANICAL MEASUREMENTS AND METROLOGY LAB</b>			
<b>B.E, IV Semester, Mechanical Engineering</b>			
<b>[As per Choice Based Credit System (CBCS) scheme]</b>			
<b>Course Code</b>	<b>17MEL37B / 47B</b>	<b>CIE Marks</b>	<b>40</b>
<b>Number of Lecture</b>	<b>03 (1Hour instruction + 2</b>	<b>SEE Marks</b>	<b>60</b>
<b>Hours/Week</b>	<b>hours Laboratory)</b>		
<b>RBT Levels</b>	<b>L1 , L2, L3</b>	<b>Exam Hours</b>	<b>03</b>
<b>Credits – 02</b>			
<b>Course Objectives:</b>			
<ol style="list-style-type: none"> <li>1. To illustrate the theoretical concepts taught in Mechanical Measurements &amp; Metrology through experiments.</li> <li>2. To illustrate the use of various measuring tools measuring techniques.</li> <li>3. To understand calibration techniques of various measuring devices.</li> </ol>			
<b>PART A : MECHANICAL MEASUREMENTS</b>			
<ol style="list-style-type: none"> <li>1. Calibration of Pressure Gauge</li> <li>2. Calibration of Thermocouple</li> <li>3. Calibration of LVDT</li> <li>4. Calibration of Load cell</li> <li>5. Determination of modulus of elasticity of a mild steel specimen using strain gauges.</li> </ol>			
<b>PART B: METROLOGY</b>			
<ol style="list-style-type: none"> <li>1. Measurements using Optical Projector / Toolmaker Microscope.</li> <li>2. Measurement of angle using Sine Center / Sine bar / bevel protractor</li> <li>3. Measurement of alignment using Autocollimator / Roller set</li> <li>4. Measurement of cutting tool forces using               <ol style="list-style-type: none"> <li>a) Lathe tool Dynamometer OR</li> <li>b) Drill tool Dynamometer.</li> </ol> </li> <li>5. Measurements of Screw thread Parameters using two wire or Three-wire methods.</li> <li>6. Measurements of Surface roughness, Using Tally Surf/Mechanical Comparator</li> <li>7. Measurement of gear tooth profile using gear tooth Vernier /Gear tooth micrometer</li> <li>8. Calibration of Micrometer using slip gauges</li> <li>9. Measurement using Optical Flats</li> </ol>			
<b>Course outcomes:</b>			
<ul style="list-style-type: none"> <li>• To calibrate pressure gauge, thermocouple, LVDT, load cell, micrometer.</li> <li>• To measure angle using Sine Center/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/ Roller set.</li> <li>• To demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats.</li> <li>• To measure cutting tool forces using Lathe/Drill tool dynamometer.</li> <li>• To measure Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth vernier/Gear tooth micrometer.</li> <li>• To measure surface roughness using Tally Surf/ Mechanical Comparator.</li> </ul>			
<b>Scheme of Examination:</b>			
<b>ONE question from part -A: 30 Marks</b> <b>ONE question from part -B: 50 Marks</b> <b>Viva -Voice: 20 Marks</b> <b>Total:100 Marks</b>			