

<b>Course Code</b>	ME 222
<b>Course Title</b>	Design of Machine Elements
<b>No. of Credits</b>	3
<b>Pre-requisites</b>	ME 220 or ME 213
<b>Compulsory/Optional</b>	Compulsory for Mechanical Engineering stream
<b>Aim(s):</b>	
To provide the students with an opportunity to identify the design processes of simple machine elements so that all the students will be able to integrate such elements into machine design.	
<b>Intended Learning Outcomes:</b>	
On successful completion of the course, the students should be able to;	
<ul style="list-style-type: none"> <li>• select simple mechanisms for specific motion requirements,</li> <li>• evaluate engineering components to design them against failure,</li> <li>• design machine elements and select standard components and devices for engineering designs by referring to design manuals, manufacturer's catalogues and data sheets,</li> <li>• work effectively in self-managed teams to develop innovative design solutions for open-ended machine design problems,</li> <li>• communicate the design solutions effectively by means of drawings, solid models, simulations, written reports and oral presentations.</li> </ul>	
<b>Time Allocation (Hours) :</b> Lectures 05 , Assignments 80 <b>(Notional Hours : 150)</b>	
<b>Course content / Course description :</b>	
<ul style="list-style-type: none"> <li>• <b>Kinematics of Planar Mechanisms:</b> Linkages, Planar mechanism synthesis and kinematic analysis of spatial mechanisms. CAM-follower systems. Selection of mechanisms.</li> <li>• <b>Failure Modes and Evaluation:</b> Design for static loading, factor of safety, stress analysis, material selection, failure modes and evaluation, selection of standard components, representation of design solutions by means of solid models and drawings.</li> <li>• <b>Case studies:</b> Threaded fasteners, springs, shafts, keys, couplings, screws, load-carrying joints.</li> <li>• <b>Machine Design Mini Project :</b> Group design project on ill-defined machine design problem</li> </ul>	
<b>Recommended Texts (if any) :</b>	
<ul style="list-style-type: none"> <li>• Giesecke, F. E., Hill, I. L., Spencer, H. C., and Mitchell, A. E. (2016). <i>Technical Drawing with Engineering Graphics</i>, (15<sup>th</sup> Edition). Prentice Hall, Boston, USA.</li> <li>• Lieu, D.K., and Sorby, S.A. (2008). <i>Visualization, Modeling, and Graphics for Engineering Design</i>. Cengage Publishers, Massachusetts, USA.</li> <li>• Myszka, D. (2012). <i>Machines and Mechanisms, Applied Kinematic Analysis</i>, (4<sup>th</sup> Edition). Prentice Hall, New York, USA.</li> <li>• Budynas–Nisbett (2008). <i>Shigley's Mechanical Engineering Design</i> (8<sup>th</sup> Edition). McGraw Hill, New York, USA.</li> </ul>	

<b>Assessment</b>	<b>Percentage Mark</b>
<b>In-course</b> Tutorials/ <u>Assignments/Quizzes/Practicals/Reports/Viva</u> Mid Semester Examination	100 -
<b>End-semester:</b>	-