

<b>COURSE NUMBER:</b> ME 3222, 4 credits	<b>COURSE TITLE:</b> Design and Manufacturing II
<b>TERMS OFFERED:</b> Fall and Spring	<b>PREREQUISITES:</b> ME 3221
<b>TEXTBOOKS/REQUIRED MATERIAL:</b> Mechanism Design: Analysis and Synthesis, Vol. 1, A. Erdman and G. Sandor, Prentice-Hall, 2001, Fourth Edition.  Juvinall & Marshak, Fundamentals of Machine Component Design, Wiley.	<b>PREPARED BY:</b> Professors Erdman, Durfee <b>DATE OF PREPARATION:</b> May, 2007
<b>COURSE LEADER(S):</b> Professors Chase, Cui	<b>CLASS/LABORATORY SCHEDULE:</b> Three 50 minute lectures and one 120 minute recitation per week <b>CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES:</b> 100 % Engineering Topics
<b>CATALOG DESCRIPTION:</b> Selection of standard mechanical components such as bearings, gears, and fasteners. Analysis and synthesis of motion in machines. Displacement, velocity, acceleration, and force analysis of mechanisms. Gear train analysis, CAM design, and shaft selection. Machine design project: apply lecture topics to develop new machines that fulfill customer specifications.	<b>COURSE TOPICS:</b>  1. Kinematics and mechanisms (analysis and synthesis of linkages) 2. Machine components (gears, bearings, shafts, motors)

<b>COURSE OBJECTIVES</b>	<ol style="list-style-type: none"> <li>1. Present introductory kinematic analysis and synthesis in a design context</li> <li>2. Present basics of machine elements for power transmission design</li> <li>3. Provide opportunities for students to reverse engineer an existing product and to design and construct a new product which uses a linkage</li> </ol>
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<b>COURSE OUTCOMES</b>	<p><b>(Letters shown in brackets are linked to program outcomes a-k)</b></p> <ol style="list-style-type: none"> <li>1. Students are able to analyze and design mechanisms to create arbitrary motion [a]</li> <li>2. Students become proficient in the use of modern software tools for linkage synthesis [k]</li> <li>3. Students are able to design basic power transmission systems that use gears, shafts and bearings [a]</li> <li>4. Each student reverse engineers a common machine that moves and transmits power. An engineering report analyzes the machine. [b, e, g ]</li> <li>5. In a team of three, students design and construct a working mechanism, and document the design in a detailed report. [c, d, g, i, k]</li> </ol>
<b>ASSESSMENT TOOLS:</b>	<ol style="list-style-type: none"> <li>1. Homework</li> <li>2. Quizzes</li> <li>3. Exam</li> <li>4. Mechanism design project</li> </ol>

**ME 3222**

*Nature of Changes*

*This syllabus was reviewed by committee in 2007 and no changes were made.*