

Course Title	<b>Mechanical Design</b>				
Course Code	<b>MME 346</b>				
Course Type	Compulsory				
Level	Undergraduate				
Year / Semester	3 <sup>rd</sup> Year / 6 <sup>th</sup> Semester				
Teacher's Name	Andreas Kyprianou				
ECTS	6	Lectures / week	3+1 hours	Laboratories / week	4 hours total
Course Purpose and Objectives	The purpose of the course is to extend the theory of machine elements to rotational machine elements used for power transfer and to introduce the general procedure of design and its constituent stages.				
Learning Outcomes	<ul style="list-style-type: none"> <li>• Explain the differences and similarities between the industrial and technical design.</li> <li>• Identify a design brief and explain how it relates to a specific need that the outcome of the design process should satisfy.</li> <li>• Explain the differences and similarities between industrial and technical design.</li> <li>• Understand the principle of operation of brakes, clutches and belts.</li> <li>• Analyze the forces acting in gear-, brake, clutch- and belt-systems</li> <li>• Understand the thermal loads in brake systems.</li> </ul>				
Prerequisites	MME 345	Required	None		
Course Content	<p>This is a two-part course on machine elements and design. The topics of the machine elements part of the course are: gears and power transmission, strength of gears, principles of operation of clutches and brakes, and the theory of flexible machine elements such as belts and chains. In the design part of the course the design process will be discussed in detail starting from design brief preparation, to the generation of ideas and concepts that could satisfy the need as described in the design brief and ending with the materialization of the final product.</p> <p><b>Laboratory Demonstrations</b></p> <ul style="list-style-type: none"> <li>• Belt drive and belt friction</li> <li>• Clutches and friction</li> <li>• Determination of gear efficiency</li> </ul>				
Teaching Methodology	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Recitation for solving sample problems</li> <li>• Design project</li> <li>• Communicative, Collaborative</li> <li>• During the first week of the semester, the course syllabus is given to students, which includes information on the course content, expected learning outcomes, assessment and office hours.</li> </ul>				

Bibliography	<ul style="list-style-type: none"> <li>• Shigley, J.E. and C.R. Mischke, <i>Mechanical Engineering Design</i>. McGraw-Hill.</li> <li>• Ullman, D.G., <i>The mechanical design process</i>. McGraw-Hill.</li> </ul>
Assessment	<ul style="list-style-type: none"> <li>• Homework                    5%</li> <li>• Midterm Exam            20%</li> <li>• Final exam                 50%</li> <li>• Design project            25%</li> </ul>
Language	Greek