

ME 316: Systems Design

<i>Course description:</i>	Engineering design process for systems and components; product development process from specifications to manufacturing; use of CAD for team-based design projects; engineering economics; engineering professional skills.
<i>Number of credits:</i>	3
<i>Course Coordinator:</i>	S. Jayaram
<i>Prerequisites by course:</i>	ME 216; ME313 or c//
<i>Prerequisites by topic:</i>	Applications of CAD in Engineering Design and Analysis Basic proficiency in using a 3D feature based CAD system
<i>Postrequisites:</i>	ME 416, ME 473
<i>Textbooks/other required materials:</i>	<ol style="list-style-type: none">1. <i>Ulrich & Eppinger's Product Design & Development, 2004.</i> McGraw-Hill.2. <i>Schaum, Sepulveda & Gottfried's Engineering Economics Schawm's Outlines, 1984.</i> McGraw-Hill.3. <i>Beer's Guide to Writing as an Engineer, 2005.</i> Wiley.
<i>Course objectives:</i>	<ol style="list-style-type: none">1. To understand the engineering design process and the engineering decision making process.2. To understand how modern CAD systems are used in a team-based engineering design process and to use fully parametric CAD models for design.3. To understand the concepts of electronic product data management in the product development process.4. To understand the basic concepts of engineering economics and using engineering economics in the decision making process.5. To use effective communication methods to present and convey design and engineering information.6. To understand the importance of professional and ethical responsibility, contemporary issues, and societal and global issues.7. To understand group dynamics and to learn to work effectively in groups.
<i>Topics covered:</i>	<ol style="list-style-type: none">1. Engineering design process.2. Engineering decision making process.3. Concepts of parametric modeling and design intent in CAD.4. Using a commercial CAD system for engineering design.5. Product life cycle management (PLM) and Product Data Management (PDM).6. Geometric Dimensioning and Tolerancing.7. Engineering economics (compound interest, present worth, future worth, rate of return, return on investment, comparing alternatives).8. Engineering communications - writing and presentations9. Professional and ethical responsibility;10. Contemporary issues;11. Societal and global issues.12. Planning and executing group projects.
<i>Expected student outcomes:</i>	<ol style="list-style-type: none">1. Meet or exceed the design process competencies for entering juniors.2. Learn to manage the design configuration through the product development process.3. Understand the concepts behind using computerized geometry models in the product development process.

4. Learn to apply proper geometric dimensions and tolerances to designs.
5. Use the basic concepts of engineering economics to aid in design decision making.
6. Use correct style and format in formal and informal methods of engineering communication.
7. Develop an understanding of project planning and execution.
8. Know how a team can use the engineering design process to carry out a project; as a member of a team, complete a design project to a finished, functional design.
9. Begin to understand the importance of professional and ethical responsibility, contemporary issues, and global and societal impact of engineering decisions.

Class schedule:

Three 50-minute lecture sessions per week, for one semester.

Laboratory schedule:

Lecture sessions converted to laboratory sessions as needed for CAD and design activities.

Contribution to meeting the professional component:

Engineering Topics

Relationship of course to program objectives:

Meets:

1. School of MME ME educational objectives: 1, 2, 3
2. School of MME ME program outcomes: (a), (c), (d), (e), (f), (g), (h), (j), (k)
3. ABET EC2000, Criterion 3 program outcomes: (a), (c), (d), (e), (f), (g), (h), (j), (k)

Prepared by: S. Jayaram

Date: April 9, 2009

Disability Statement:

Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. All accommodations must be approved through the Disability Resource Center (DRC) in Administration Annex 205, 335-1566 in Pullman.