ME 395 SUMMER 2012: Introduction to Design

Instructors: Vipin Kumar and Keith Elder

Course Goals: The overarching goal of this course is to impart an understanding of the design process that underlies any design undertaking, regardless of the particular nature of the design problem. It is expected that after taking ME 395 a student will be able to take any design project and execute it in a systematic way, taking into consideration the broader context of design such as risk and liability, ethics, impact on society and the environment, and engineering economics.

Instructors	Vipin Kumar, MEB 312, vkumar@uw.edu
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Office hours	M Th 1-2 PM, or by appointment
Teaching Assistant	Brian Aher, MEB 129, brian.aher@gmail.com
Office Hours	Wed 2-4 PM in MEB 129.
Text (required)	*Engineering Design* by George E.Dieter, 4th, McGraw Hill, 2009.
Course Format	Two meetings per week of lecture/discussion, labs, plus a course project. There will be two written exams. There will be project presentations scheduled in week 9. A written project report is required at the end of week 9, which is the final week of the summer quarter.
Project	Teams of three to four students will conduct a project in which the design process is carried out to the conceptual design stage.
Journal	An individual **journal** is required in this course. Use your journal to document and organize your thoughts concerning all aspects of the labs and the project (notes from team meetings; summary of action items, internal and external communications; design specifications, design ideas, calculations, modeling, product information, scheduling, etc.) Date your entries. The journal should have a weekly summary.
Assignments	All assignments are to be done as a team. Due at start of class on the date indicated. Late submittals not accepted w/o prior approval.
Class Meetings	**M Th 2:20- 3:50pm in MEB 103**
Lab/Project Meetings	**Th 4 – 5:30pm in MEB 103 (attendance required)** **Optional Team meetings W 2.20-3.20 (MEB 103 available).**
Grading	Homework 10%, Labs 20 %, Two Exam 20% each, Project presentation 10%, Project report 20%.

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Tentative Class Schedule. *Any changes will be announced in class*.

Week	Monday	Thursday	Thursday Lab
1	6/18 Introduction: *The Design Process* Text, Ch. 1	6/21 *Design Problem Formulation* Text, 3.1-3.4; 3.6	6/21 **Lab 1: Evaluating Design Features** Text, Chapter 2.5, 3
2	6/25 *Team* Behavior *& Tools* Text, Ch. 4	6/28 *Engineering Design Research* Text, Ch. 5	6/28 **Lab 2: Design Decomposition** Text, Chapter 6.8
3	7/2 *The Design Matrix: A Tool to Evaluate Design Concepts*	7/5 *Concept Generation* Text, Ch. 6	7/5 **Lab 3: Brainstorming Solutions** Text, Ch. 6 and 11
4	7/9 *Decision Making/ Concept Selection* Text, Ch. 7	7/12 *Design for Environment* Text, 8.9, 8.11	7/12 **Lab 4: Application of Ethical Reason** Text, Ch. 17.8-17.10
5	7/16 **Exam1**	7/19 *Professional Ethics* Text, 17.8-17.10	7/19 Design Project Introduction
6	7/23 *Written Communication* Text, 9.33-9.34	7/26 *Engineering Economics* Text, Ch 18	7/26 *Design Project*
7	7/30 *Engineering Cost Estimating* Text, Ch 16	8/2 *Modeling*, *S*imulation, and Optimization Text, Ch 10, 15.8-10	8/2 *Design Project*
8	8/6 *Human Factors* *Risk, Reliability & Safety* Text Ch 14, 8.8-8.84	8/9 *Persuasive Presentation* Text, 9.35-9.36	8/9 *Presentation Preparation* *Design Project*
9	8/13 **Project Presentations**	8/16 **Project Presentations** Course review	8/16 **Exam 2** *Design Report Due*