EK 210: Introduction to Engineering Design
Fall 2015
Syllabus

Week	Topic	On-Line Learning Content	In-Class Activity	Reading from Text	Assignments
1	Overview of the Course; Reverse Engineering and Product Teardown	a) Class organization and requirements b) Basic principles of reverse engineering c) Shop safety I	a) Review of the course and first assignment (30 min) b) Team projects (80 min)	Chapters 1 and 2	First set of teams formed. Reverse engineering project handed out.
2	Oral and Written Communications for Engineers	a) Engineering sketching and drawing b) Oral communications c) Written communications	a) Review of on-line materials (15 min) c) Team projects (95 min)	Chapter 9 and 11; Appendix B	
3	Basic Project Management and Working in Teams	a) Project management b) Working in teams	a) Team reports (90 min) b) Review of on-line material, next assignment and new teams formed (20 min)	Chapters 15 and 16	Reverse engineering reports (oral and written) are due. Second set of teams formed. Client-based design projects are handed out.
4	Problem Definition and Determining Customer Needs	a) Overview of the engineering design process b) Determining client objectives c) Doing market research	a) Review of online material (60 min) b) Team projects (50min)	Chapters 3, 4, and 5	
5	Identifying Product Functions and	a) Establishing functional requirements	a) Review of on-line material (15 min)	Chapters 6 and 7	

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	Establishing Engineering Specifications	b) Determining target specifications c) Working with numbers	b) Team projects (95 min)		
6	Generating and Evaluating Alternatives	a) Creating design alternatives (revisited) b) Evaluating design alternatives	a) Review of on-line material (15 min) b) Team projects (95 min)	Chapter 8	
7	Design Portfolios	a) Creating design portfolios	a) Team reports (90 min) b) Review of on-line material, next assignment and new teams formed (20 min)		Design reviews (written and oral) are due.
8	Prototypes, Models and Proof-of-Concept	a) Shop safety II b) Issues to consider before building physical models and prototypes c) Using Arduinos etc. d) Simple circuits	a) Review of on-line material (15 min) b) Tour of EPIC (30 min) c) Team projects (65 min)	Chapter 10, Appendix A	
9	Models and Proof-of-Concept (cont.)	a) Fundamental concepts for mathematical modeling b) Types of mathematical models and solutions c) Uses of mathematical models	a) Review of on-line material (15 min) b) Team projects (90 min)	Chapter 12	

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10	Principles of Industrial Design and Ethics in Design	a) An overview of industrial design b) Ethics in design and the responsibility of the engineer	a) Review of assignment (15 min) b) Team projects (90 min)	Chapter 17	
11	Engineering Economics	a) Estimating product cost b) Profit and loss	a) Review of assignment (15 min) b) Team projects (90 min)	Chapter 13	
12	Design for Manufacturing and Design for Sustainability	a) DfX b) Principles of design for assembly and manufacturing c) Introduction to supply chains	a) Review of assignment (15 min) b) Team projects (90 min)	Chapter 14	
13 (W/R)			a) Team projects (110 min)		
13/14	Project Presentations		a) Team reports (90 min) b) Evaluation		Final design reports, both oral and written.