EK 210 A1 (Tuesday): Introduction to Engineering Design
Spring 2015
Syllabus

Date	Topic	On-Line Learning Content	In-Class Activity	Reading from Text	Assignments
1/20	Overview of the Course and Introduction to Engineering Design	a) Class organization and requirements b) Safety in EPIC c) Overview of the engineering design process	a) Review of the course (20 min) b) Tour of the facility; review of safety (40 min) c) Team Projects (50 min)	Chapters 1 and 2	Reverse engineering project handed out
1/27	Reverse Engineering and Product Teardown	a) Basic principles of reverse engineering b) Introduction to supply chains	a) Review of on-line materials (10 min) b) Team assignments (5 min) c) Team projects (95 min)	Chapters 6 and 14	
2/3	Basic Project Management and Working in Teams	a) Project management b) Working in teams c) Design portfolios	a) Team reports (80 min) b) Review of on-line materials (10 min) c) New teams formed (20 min)	Chapters 15 and 16	**Reverse engineering reports (oral and written) are due** Design projects are handed out
2/10	Problem Definition and Determining Customer Needs	a) Review of the engineering design process b) Determining client objectives c) Doing market	a) Review of online material (10 min) b) Team projects (110 min)	Chapters 3, 4, and 5	

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		research			
2/24	Identifying Product Functions and Establishing Engineering Specifications	a) Establishing functional requirements b) Determining target specifications c) Creating design alternatives	a) Review of assignment (10 min) b) Team projects (40 min) c) Team reports (60 min)	Chapters 6 and 7	Completion of Problem Definition Phase: Informal team presentation on objectives, metrics, functional requirements and constraints
3/3	Generating and Evaluating Alternatives	a) Creating design alternatives (revisited) b) Evaluating design alternatives	a) Review of assignment (10 min) b) Team projects (100 min)	Chapter 8	
3/17	Prototypes, Models and Proof-of-Concept	a) Distinguishing models from prototypes and proofs-of-concept b) Issues to consider before building physical models and prototypes	a) Team reports (110 min)	Chapter 10, Appendix A	Completion of Conceptual Design Phase: **Design Review: Teams report on alternative designs and chosen design and BOM.**
3/24	Models and Proof-of-Concept (cont.)	a) Fundamental concepts for	a) Review of assignment (10 min)	Chapter 12	

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		mathematical modeling b) Types of mathematical models and solutions c) Uses of mathematical models	b) Team projects (100 min)		
3/31	Engineering Drawings and Communicating the Outcome	a) Engineering sketching and drawing b) Oral communications c) Written communications	a) Review of assignment (10 min) b) Team reports (30 min) c) Team reports (60 min)	Chapter 9 and 11, Appendix B	Completion of Preliminary Design Phase: Teams report on modeling work and status of prototypes
4/7	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 (10 min) b) Team projects (100 min)	Chapter 17	
4/14	Product Economics	a) Estimating product cost b) Profit, loss and margin	a) Review of assignment (10 min) b) Team projects (100 min)	Chapter 13	
4/21	Design for Manufacturing and Design for Sustainability	a) DfX b) Principles of design for assembly and	a) Review of assignment (10 min) b) Team projects (100	Chapter 14	

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		manufacturing c) Design for assembly	min)		
4/28	Project Presentations		a) Team reports (110 min total)		**Completion of Detailed Design: Final design reports/design competition**