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| 1    | 24 Jan | Overview of the Course; Reverse Engineering & Product Teardown | a) Class organization & requirements  
b) Basic principles of reverse engineering  
c) Shop safety I | a) Review of the course & first assignment (30 min)  
b) Team projects (75 min) | Chapters 1 & 2  
Reverse engineering project handed out. (Assignment #1) |
| 2    | 31 Jan | Oral & Written Communications for Engineers | a) Engineering sketching & drawing  
b) Oral communications  
c) Written communications | a) Review of on-line materials (15 min)  
b) Team projects (30 min)  
c) Team reports (60 min) | Chapter 9 & 11; Appendix B  
Reverse engineering reports (oral) are due. |
| 3    | 7 Feb  | Basic Project Management & Working in Teams | a) Project management  
b) Working in teams | a) Review of on-line material and next assignment (60 min)  
b) Team projects (45 min) | Chapters 15 & 16  
Client-based design projects are handed out. (Assignment #2) |
| 4    | 14 Feb | Problem Definition & Determining Customer Needs | a) Overview of the engineering design process  
b) Determining client objectives  
c) Doing market research | a) Review of online material (15 min)  
b) Team projects (90 min) | Chapters 3, 4, & 5  
Review Assignment #2 (Teams with instructors only.)  
Design review requirements handed out (Assignment #3) |
| 5    | 28 Feb | Identifying Product Functions & Establishing Engineering Specifications | a) Establishing functional requirements  
b) Determining target specifications  
c) Working with numbers | a) Review of on-line material (15 min)  
b) Team projects (90 min) | Chapters 6 & 7 |
| 6    | 14 Mar | Generating & Evaluating Alternatives | a) Creating design alternatives (revisited)  
b) Evaluating design | a) Review of on-line material (15 min)  
b) Team projects (90 min) | Chapter 8  
Design reviews (oral) are due.  
Preliminary design |
## EK 210: Introduction to Engineering Design
### Spring 2017
#### Syllabus

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| 7 21 Mar | 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) EPIC Boot Camp (105 minutes) | Chapter 10, Appendix A | assignments are handed out. (Assignment #4) |
| 8 28 Mar | Models & 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 | |
| 9 4 April | 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 on-line material (15 min)  
b) Team projects (90 min)  
**Note:** Preliminary design reviews are one-on-one with instructors. | Chapter 17 | Preliminary Design Reviews (oral) are due  
Final Detailed Design  
Assignments are handed out. (Assignment #5) |
| 10 11 Apr | Engineering Economics | a) Estimating product cost  
b) Profit & loss | a) Review of on-line material (15 min)  
b) Team projects (90 min) | Chapter 13 | |
| 11 18 Apr | Design for Manufacturing & | a) DfX  
b) Principles of design for | a) Review of Assignment (15 min) | Chapter 14 | |

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<td>Design for Sustainability</td>
<td>assembly and manufacturing c) Introduction to supply chains</td>
<td>b) Team projects (90 min)</td>
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<td>12</td>
<td>Design Portfolios</td>
<td>a) Creating Design Portfolios</td>
<td>a) Review of Assignment (15 min)</td>
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<td>Prototypes are due!</td>
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<td>25 Apr</td>
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<td>b) Team projects (90 min)</td>
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<td>13</td>
<td>Project Presentations</td>
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<td>a) Team reports (90 min)</td>
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<td>Final design reports (oral &amp; written)</td>
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<td>2 May</td>
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<td>b) Evaluation (15 min)</td>
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