**ENGR 1620 *INTRODUCTION TO ENGINEERING***

**Text**: (DL) Engineering Design – A Project-based Introduction, Dym and Little, John Wiley and Sons, Inc., 2009 (ISBN 0-978—0-470-22596-7)

(M) The New Way Things Work, David Macauley, Houghton Mifflin,1998 (ISBN: 0-395-93847-3)

**Supplementary Texts:** (UE) Product Design and Development, Karl T. Ulrich and Steven D. Eppinger, Library Reserve

**Instructor:** David L. Green, dlg9s@virginia.edu

(M) Mondays - Lecture

(W) Wednesdays - Team Workshop

(F) Fridays - Team Presentations

**Table 1: Schedule for Fall 2013**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Date** | **No.** | **Topic/Event** | **Reading Assignment** | | | **Deadlines** |
| Aug 28 (W) | 1 | Introduction to ENGR 1620 Conceptual Design Team Assignments  (Artifact Assignment) | DL: Ch. 1 | | |  |
| 30 (F) | 2 | What is Engineering?  Presentation and Discussion of Design Examples | DL: Ch. 2 | | |  |
| Sept 2 (M) | 3 | Intro to Engineering Challenge Project: Design of Youth Football Helmets- Problem Background |  | | |  |
| 4 (W) | 4 | Problem Definition/ Creativity/ Internal and External Searching | DL: 3.5, 5.2.1, 5.2.2  UE Ch. 6 pp. 115-118 | | |  |
| **6 (F)** | 5 | Concussions and Traumatic Brain Injury (TBI) |  | | | **Artifact Report**  **External Visitor: Jeff Barth** |
| 9 (M) | 6 | Product Planning & Specifications | DL: 3.2, 3.4, 4.2  UE Chs. 3-5 | | |  |
| 11 (W) | 7 | Concept Generation  (Conceptual Design Milestone Assignment) | DL: 5.1, 5.2.4 5.3, 5.4  UE Ch. 6 | | |  |
| 13 (F) | 8 | Team Workshop |  | | |  |
| 16 (M) | 9 | Concept Selection – Screening and Scoring | DL: 5.5, 5.8 | | |  |
| 18 (W) | 10 | Team Workshop |  | | |  |
| **20 (F)** | 11 | Challenge Concept Presentations |  | | |  |
| **23 (M)** | 12 | Challenge Concept Presentations/Discussion |  | | | **Conceptual Design** |
| 25 (W) | 13 | Challenge Concept Selection  Problem Decomposition | UE Ch. 6 pp. 112-114 | | | **Concept Selection** |
| 27 (F) | 14 | Engineering Design Team Assignments  Way It Works Example/Assignments  Technical Drawing | DL: 6.4 | | |  |
| 30(M) | 15 | Project/Design Management | DL: Ch. 7 | | |  |
| Oct 2 (W) | 16 | Team Workshop | |  |  | | |
| 4 (F) | 17 | The Way It Works (2-3 teams) | |  |  | | |
| 7 (M) |  | Overview: Materials and Manufacturing | | Handout |  | | |
| 9 (W) | 18 | Team Workshop | |  |  | | |
| 11 (F) | 19 | The Way It Works (2-3 teams) | |  |  | | |
| 14 (M) | 20 | Reading Holiday | |  |  | | |
| 16 (W) | 21 | Team Workshop | |  |  | | |
| 18 (F) | 22 | EDT Progress Reports | |  |  | | |
| **21 (M)** | 23 | Review: Open-ended Problem Solving/ Proof-of-Concept | | DL: 5.6  UE Ch. 8 | **Preliminary Design** | | |
| 23 (W) | 24 | Team Workshop | |  |  | | |
| 25 (F) | 25 | The Way It Works (2-3 teams) | |  |  | | |
| 28 (M) | 26 | Failure in Engineering | |  |  | | |
| 30 (W) | 27 | Team Workshop | |  |  | | |
| **Nov 1 (F)** | 28 | EDT Progress Reports | |  |  | | |
| 4 (M) | 29 | Ethics/ Design Safety & Product Liability | | DL: Ch. 9 Handout |  | | |
| 6 (W) | 30 | Team Workshop [*Reflection*] | |  |  | | |
| 8 (F) | 31 | The Way It Works (2-3 teams) | |  |  | | |
| 11 (M) | 32 | Product Development and Production/ Economics | | DL: Ch. 8  UE Ch. 13 |  | | |
| 13 (W) | 33 | Team Workshop | |  |  | | |
| 15 (F) | 34 | The Way It Works (2-3 teams) | |  |  | | |
| 18 (M) | 35 | Effective Communication/ Final Design Report Assignment | | DL: 6.1,6.2,6.3 |  | | |
| 20 (W) |  | Team Workshop | |  |  | | |
| 22 (F) |  | Prototype Demo | |  |  | | |
| 25 (M) | 36 | EDT Progress Reports | |  |  | | |
| 27 (W) | 37 | Thanksgiving Break | |  |  | | |
| 29 (F) | 38 | Thanksgiving Break | |  |  | | |
| Dec 2 (M) | 39 | Prototype Demo | |  |  | | |
| 4 (W) | 40 | Prototype Demo | |  |  | | |
| 6 (F) | 41 | Prototype Demo | |  | **Final Prototype** | | |
| 13 (F) | 42 | Group Presentations | |  | **Final Design Report** | | |