1.6 Engineering Design Process
Part 1 – Understand: Research

Summary
Students study how and why engineers perform research about a problem. Students research their selected design problem and summarize what they find.

Learning Objectives
After this class, students will be able to:

- List the sources to which an engineer might look when performing research.
- Find and summarize information from sources for their own research.

Materials
- Computers with internet access.

Time
80 minutes

Procedure/Pacing
Research Review
1. Review the “Why” and the “How” of engineering research:
   a. Why?
      - Determine what others have tried.
      - Find analogies in other fields.
      - Possible solutions in nature.
   b. How?
      - Reverse Engineering
      - Literature or Patent Searches.
      - Observation of natural processes.

2. Have students meet in their groups to briefly discuss how they will approach research for their Design-Your-Life problem. Individuals should perform their own research, but groups may want to outline areas in which each member will concentrate. For example, if the problem is to design a better method to get out of bed in the morning, one student might research what wakes people up naturally, another might research existing types of waking devices through patent...
searches, and another might research studies on waking in scholarly literature.

3. Students should summarize each of at least 3 things they researched that are related to the Design-Your-Life problem. (Assignment 1.6i)

**In-Class Assignment**
Assignment 1.6i: Research

**Resources**
Google Patents (Google search engine for the USPTO)
https://patents.google.com/

Google Scholar (Google search engine for scholarly literature)
https://scholar.google.com/

**Homework**
Assignment 1.7h: Engineering Design Process Part 2 – Design