# 1.6 Engineering Design ProcessPart 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

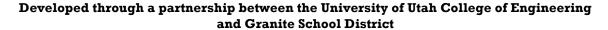
80 minutes

# 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

