



Check off List:

1 Choose one:

__ a __ b __ c Date

Completed:

Counselor:

2 Merit Badge

Date Completed:

Counselor:

3 Do All:

Date Completed:

Counselor:

4 Choose one:

__ a __ b

Date Completed:

Counselor:

5 Design

Date Completed:

Counselor:

6 Discussion:

Date Completed:

Counselor:

Whoosh!

This module is designed to help you explore how engineering affects your life each day.

1. Choose A or B or C and complete ALL the requirements.
 - a. Watch about three hours total of engineering-related shows or documentaries that involve motion or motion-inspired technology. Then do the following:
 - i. Make a list of at least two questions or ideas from each show.
 - ii. Discuss two of the questions or ideas with your counselor.

Some examples include—but are not limited to—shows found on PBS ("NOVA"), Discovery Channel, Science Channel, National Geographic Channel, TED Talks (online videos), and the History Channel. You may choose to watch a live performance or movie at a planetarium or science museum instead of watching a media production. You may watch online productions with your counselor's approval and under your parent's supervision. One example is the NOVA Lever an Obelisk page on ancient Egypt and the use of levers, available at www.pbs.org/wgbh/nova/egypt/raising/lever.html.

Examples of magazines include—but are not limited to—Odyssey, Popular Mechanics, Popular Science, Science Illustrated, Discover, Air & Space, Popular Astronomy, Astronomy, Science News, Sky & Telescope, Natural History, Robot, Servo, Nuts and Volts, and Scientific American.

- b. Read (about three hours total) about motion or motion-inspired technology. Then do the following:
 - i. Make a list of at least two questions or ideas from each article.
 - ii. Discuss two of the questions or ideas with your counselor.
 - c. Do a combination of reading and watching (about three hours total). Then do the following:
 - i. Make a list of at least two questions or ideas from each article or show.
 - ii. Discuss two of the questions or ideas with your counselor.
2. Choose ONE merit badge from the following list. (Choose one you have not already used for another Nova award.) After completion, discuss with your counselor how the merit badge you earned uses engineering.

Archery	Electronics	Railroading
Aviation	Engineering	Rifle Shooting
Composite Materials	Inventing	Robotics
Drafting	Model Design and Building	Shotgun Shooting
Mining in Society		

3. Do ALL of the following:
 - a. Make a list or drawing of the six simple machines.
 - b. Be able to tell your counselor the name of each machine and how each machine works.

Helpful Link

"Six Simple Machines": [ConstructionKnowledge.net](http://www.constructionknowledge.net)

Website: http://www.constructionknowledge.net/general_technical_knowledge/general_tech_basic_six_simple_machines.php

- c. Discuss the following with your counselor:
 - i. The simple machines that were involved with the motion in your chosen merit badge (Hint: Look at the moving parts of an engine to find simple machines.)
 - ii. The energy source causing the motion for the subject of your merit badge
 - iii. What you learned about motion from earning your merit badge
4. Choose A or B and complete ALL the requirements.
 - a. Visit an amusement park. Then discuss the following with your counselor:
 - i. The simple machines present in at least two of the rides
 - ii. The forces involved in the motion of any two rides
 - b. Visit a playground. Then discuss the following with your counselor:
 - i. The simple machines present in the playground equipment
 - ii. The forces involved in the motion of any two playground fixtures
5. Do the following:
 - a. On your own, design one of the following and include a drawing or sketch: an amusement park ride OR a playground fixture OR a method of transportation.
 - b. Discuss with your counselor:
 - i. The simple machines present in your design
 - ii. The energy source powering the motion of your creation
6. Discuss with your counselor how engineering affects your everyday life.