



Great Lakes Field Service Council – STEM Committee  
Michigan Crossroads Council

Name:

Nova Boy Scout Engineering  
**Whoosh!**

Troop:

Date:

*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 an episode or episodes, read or do a combination of both watching and reading (about three hours total) of engineering-related shows/documentaries/resources that involve that involve motion or motion-inspired technology. Then do the following:

1. Make a list of at least five questions or ideas from your research.

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2. Discuss two of the questions or ideas with your counselor.

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

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**3. Do ALL of the following:**

A. Make a list or drawing of the six simple machines.

1. \_\_\_\_\_ 2. \_\_\_\_\_  
3. \_\_\_\_\_ 4. \_\_\_\_\_  
5. \_\_\_\_\_ 6. \_\_\_\_\_



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B. Be able to tell your counselor the name of each machine and how each machine works.

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### 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](http://www.constructionknowledge.net/general_technical_knowledge/general_tech_basic_six_simple_machines.php)

C. Discuss the following with your counselor:

1. 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.)

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2. The energy source causing the motion for the subject of your merit badge

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3. What you learned about motion from earning your merit badge

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### 4. Choose A or B and complete ALL the requirements.

A. Visit an amusement park. Then discuss the following with your counselor:

1. The simple machines present in at least two of the rides

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2. The forces involved in the motion of any two rides

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B. Visit a playground. Then discuss the following with your counselor:

1. The simple machines present in the playground equipment

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2. The forces involved in the motion of any two playground fixtures

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**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:

1. The simple machines present in your design

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2. The energy source powering the motion of your creation

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**6. Discuss with your counselor how engineering affects your everyday life.**

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