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## Lesson Plans

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### Give Me a Brake

[Download Full Lesson Plan](#)  
(Full teacher resource documents are included)

**Lesson Focus**  
Lesson focuses on brakes, force, and friction, using bicycle rim brakes to demonstrate basic braking mechanisms to stop, slow, or prevent motion.

**Lesson Synopsis**  
The Give Me a Brake activity explores the concept of how brakes can stop or slow mechanical motion. Students examine the operation of a bicycle brake and use low cost materials to devise a simple braking system, then work as a team to suggest improvements to current bicycle brake designs.

**Age Levels:** 8-18

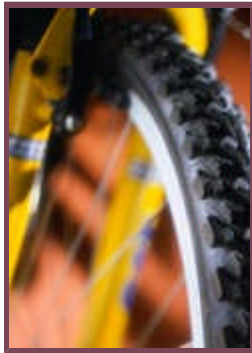
**Objectives**

- Learn about braking systems.
- Learn about force and friction.
- Learn about the interaction between different materials.
- Learn about teamwork and the engineering problem solving/design process.

**Anticipated Learner Outcomes**

As a result of this activity, students should develop an understanding of:

- force and friction
- brakes



- impact of engineering and technology on society
- engineering problem solving
- teamwork

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### Lesson Activities

Students learn about how basic rim bicycle brakes work, and discuss force and friction. Students work in teams to experience a simple braking system using three different materials, they discuss advantages of each, develop recommend changes to improve bicycle braking systems, and present to class.

### Resources/Materials

- Teacher Resource Documents (attached)
- Student Resource Sheets (attached)
- Student Worksheet (attached)

### Alignment to Curriculum Frameworks

Curriculum alignment sheet is included in [PDE](#).

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