

# Carolina STEM Challenge™

## Hydroelectric Power

### Overview

This kit highlights the use of hydroelectric power. Students first observe a hand generator and the workings of converting mechanical energy into electrical energy. Then, student groups design their own water wheel and compete to implement the most effective design. They demonstrate their knowledge of emerging energy sources by answering questions and interpreting results. A scoring rubric is provided for evaluating the project. This lab is designed for a class of 32 students working in eight groups of 4.

### Learning Objectives

Students will

- learn about hydroelectric power generation.
- design their own water wheel.
- quantify the effectiveness of their wheel.

### Content Standards

To view the national and local standards met by this kit, visit [www.carolina.com/correlations](http://www.carolina.com/correlations).

### Time Requirements

#### Day 1

Preparation . . . . .20 minutes  
 Connections . . . . .15 minutes  
 Energize Demonstration . . . . .10 minutes  
 Design Activity . . . . .40 minutes

#### Day 2

Preparation . . . . .15 minutes  
 Design Activity (continued) . . . . .50 minutes

#### Day 3

Presentations . . . . .30 minutes

The Connections reading passage can be assigned as homework. On Day 1 students brainstorm and develop their plan, and on Day 2 they implement their design.