



## ***ROBOT Design Lab***

### **Grade 8**

#### **Program Objectives**

- Students will apply the scientific method to the design of a working robot.
- Students will design towards a specific task objective, using particular simple machine components.
- Students will evaluate the success of the performance of the robot.

#### **Suggested Classroom Activities**

- 1) Ask your students why we use robots and to suggest jobs where robots could be used to replace one or more humans. For example:
  - ✓ To perform repetitive tasks, such as certain factory work.
  - ✓ To work in dangerous areas, such as toxic clean up sites.
  - ✓ To explore uninhabitable places, such as space or under water.
  - ✓ To perform work such as lifting and moving very heavy weights.
  - ✓ To perform tasks that require fine precision, such as surgery.
- 2) Identify common items that use robots or automated systems and consider which human body system is replaced by them, for example;

Vending machine	automatic coin sorting	hands/brains
Home heating system	thermostat	brainstem
Security system	electric eye	eye
Computer	central processing unit	brain
- 3) Isaac Asimov authored a science fiction series titled “I, Robot”. In the series, he described the “Three Laws of Robotics” which all robots in his world were programmed to obey:
  1. No robot shall ever harm a human, or through inaction allow a human to come to harm.
  2. A robot shall always follow the orders of humans unless those orders conflict with the first law.
  3. A robot shall prevent itself from being harmed, unless doing so would conflict with the first two laws.

Ask the students if they would add any other ethical constraints to their robots or to be more specific.

**The Health Adventure**  
**PO Box 180 Asheville, NC 28802**  
**(828) 257-4535 School Scheduling**  
**(828) 254-6373 Content Questions**  
[www.thehealthadventure.org](http://www.thehealthadventure.org)

