



## **Sr. Robotics Engineer**

### **Grades 4 - 7**

Build the **OWI All Terrain 3-in-1 Robot** to take home. Explore the mechanical and electrical engineering that makes robots possible. Build circuits, experiment with gears and explore sensors that robots use to see and hear to guide their actions. Learn the fundamentals of programming robots with Mad Science's Sandwich programming. **Lego Mindstorms® Robots** are available for building and programming.

#### **Robots in Action**

Our robotic engineers are put to the test in this day's activities. Each team is outfitted with a Lego Mindstorm Robotic Invention System and challenged to build a robot from scratch. Each team decides on the particular propulsion system and sensors best suited to the challenges they are given.

#### **Smart Design**

Students will design their own robot by following a series of design stages: What will your robot do? How will your robot move? Where will your robot need to go? How will your robot need to adapt? Students will invent a new robot design and present their innovative ideas. Using common materials, they will design and build their own robotic arm.

#### **To Build or Not To Build**

The history of robotics is filled with some amazing stories. We look at ways that technology has helped humanity as well as some of the problems it presents. We will hear about real and fictional stories of the ethics of robotics, learning about the ways we have solved some of the problems that have arisen. Use your acting skills to teach other students about robotics success stories.

#### **The Future and Beyond**

We look at the latest technologies in robotics and the ways that robots are being utilized. We will then use all of our creative energies to explore other areas of life where robots could be applied. Working teams design a robot to meet a human need and present their ideas in a Robotics Proposal Showdown.

#### **Gear It Up** (only in 5 day camps)

Students review the mechanics of robots. Activities include learning about gears, torque, and pneumatic and hydraulic systems. Using Lego Mindstorms, they will explore robot locomotion systems over different terrain and learn how NASA scientists found the best design for the Mars Rover projects.

Revised 1/2/2018