

# SUMMER ENGINEERING ACADEMIES 2014

## ROBOTICS

Learn to design, build, and program a robot to complete a task. Topics include motors, actuators, sensors and programming. Participants will design and assemble a robot to compete in challenges like obstacle courses.

## STRUCTURE DESTRUCTION

Learn how bridges, buildings, and towers work. Participants will design, analyze with computers, and construct a basswood bridge, which will be subjected to destructive testing to determine its strength.

## ENERGY

Learn how energy is produced and consumed, with a focus on renewable sources. Participants will create a mini power grid using photovoltaics, wind turbine, battery bank, and various electrical loads.

## JAVA PROGRAMMING

Learn to write Java programs and be introduced to the field of Computer Science. Topics including object-oriented programming, Java syntax, and the Eclipse development environment.

## 3D MODELING

Learn to geomodel buildings in 3D from facility blueprints and digital images. Participants will use image processing tools and mapping software. 3D building models created will be published and shared online.

## GEARS AND SPROCKETS

Learn to design and build mechanical drive trains for vehicles. Topics include friction, torque, motors, gears, and sprockets. Vehicles will be built to optimize speed, acceleration, and climbing to compete on a racetrack.



**Week-long sessions**  
**8am-3pm daily**  
**5 middle school sessions**  
**5 high school sessions**

**June 9 - August 8, 2014**  
**On UAA Campus**

**Only \$100 per session!**  
**includes lunch**

Fee waivers available to students with financial need

**Deadline to Apply:**  
**May 2nd, 2014**



Apply online:

<http://www.uaa.alaska.edu/sea>

The cost is reduced by more than 75% thanks to the generosity of BP



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 UNIVERSITY of ALASKA ANCHORAGE

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