

# Engineering Practices in the Secondary Science Classroom

## Engineering Training for Grade 6-12 Math and Science School Teams

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*A Framework for K-12 Science Education and the College and Career Ready Mathematics standards* has asked that science and math educators help students develop the skills and knowledge needed to learn STEM ideas within the science and math classroom. This professional development workshop is for teams of math and science educators (a) who have formal engineering training and need sustained professional development **and/or** (b) those who have little or no exposure to engineering design practices. The workshop activities will introduce grade 6-12 teachers to the practices of engineering design and mathematical modeling while they are immersed in an engineering experience. Using building materials such as wood, steel, cardboard, epoxy, and Styrofoam, the instructors will explain the role of engineers in designing product and services, the roles of experiments and computer modeling, how engineering is integral to science and mathematics, and immerse the participants in hands-on exercises that clearly show how the engineering design process works. At the end of the workshop, participants will (a) walk away with an understanding of the basic distinction between the fields of science and engineering, (b) have the opportunity to immerse themselves in a content rich design activity that gives them a glimpse of the flexibility and transferability of scientific and engineering design practices, (c) model with mathematics, and (d) be able to integrate design activities in an informed way in their classroom. Effective teaching strategies and instructional sequences used to support the integration of design tasks into the classroom will be made explicit as the participants participate within the content rich design activity. Cost: \$120/team of a science teacher and a math teacher (includes parking and resources).

Time	Day 1	Time	Day 2
8:00-8:30	Registration	8:00-8:30	Understanding engineering design
8:30-10:00	Engineering in the Secondary Science Classroom	8:30-12:00	Engineering Design Challenge II
10:00-1:00	Engineering Design Challenge I: Linking experiments, modeling and design	12:00-1:00	Role of computer modeling
1:00-1:45	Lunch Break	1:00-1:45	Lunch break
1:45-3:00	Completing EDC I.	1:45-3:00	Classroom implementation
3:00-4:00	Discussion on EDC I	3:00-4:00	Wrap up

**ASU Contact Information**  
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**ADE Registration Information**  
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**Map and Public Parking**  
<http://www.asu.edu/map/map.html>

