

AFRL NEW MEXICO STEM OUTREACH

ROBOTICS CHALLENGE

The Robotics Challenge mission, for middle school students, is a school-based program in which students explore systems engineering, computer science and robotics by learning to build and program small robots to complete tasks and solve problems.

Teachers and students are provided with online training and materials related to robotics and computer science. AFRL NM STEM Outreach provides teachers with materials they can use to explore and apply computer science and engineering concepts with their students over the course of the school year.



Students are introduced to the concept of a system and see how a computer is a system. The students learn to think like a computer, in binary, using only ones and zeros and try their hand at some binary math. They then discover how to use a computer to talk to the microcontroller using computer programming languages.

Teams create solutions to a variety of challenges through computer programming and building robots that use a variety of hardware and electrical components.



Student teams complete a series of online assignments to earn points toward qualification for the Robotics Challenge Expo. The culminating Expo event is held in the spring at our facility on Kirtland Air Force Base for the top 30 point earning teams. At the Expo, student teams demonstrate and share creative applications of their skills and knowledge and complete programming challenges.

The Robotics Challenge is a great opportunity to actively involve your students in innovative applications of science, technology, engineering, and math (STEM) concepts.

YOU PROVIDE THE STUDENTS, THE ENTHUSIASM, AND THE EXPERTISE, AND MAKE THE FOLLOWING COMMITMENTS:

- ◆ Complete and submit the Coach Registration Form (separate attachment).
- ◆ Attend the Robotics Challenge Coach Orientation.
- ◆ Complete the Robotics Challenge Coach on-line training.
- ◆ Ensure that your school submits an EPA Modification Form.
- ◆ Recruit and create student teams for the Robotics Challenge.
- ◆ Complete and submit a Teams per Coach Form to register your teams.
- ◆ Ensure that your teams have access to computers for programming.
- ◆ Provide guidance and advice as your teams work through the units building and programming their robots.
- ◆ Ensure that teams meet assignment requirements (including file sizes) BEFORE submitting assignments.

If one or more of your teams qualifies for the Robotics Challenge Expo:

- Submit requested information for the Robotics Challenge Expo by specified deadlines.
- Arrange for a substitute teacher, if needed, for the Robotics Challenge Expo.
- Arrange for transportation for your students to attend the Robotics Challenge Expo.
- Attend the Robotics Challenge Expo with your students.
- Complete and submit two (2) Coach Feedback forms: one covering the on-line training and one covering the Robotics Challenge program and Expo.
- Submit (mail or fax) Robotics Challenge Expo Student Feedback forms.

If you have questions or need additional information, please contact us at:

(505) 846-2677

OR

AFRL.RDMX.NMSTEMOutreach@us.af.mil

OR

Visit us on the web at:

afrlnm.com/STEM/missions

