

# The ARRL Teachers Institute on Wireless Technology

Equipping teachers for the STEM challenge.

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As our nation looks toward an increasingly high-tech future, our educational system must improve the preparation of our students in the areas of Science, Technology, Engineering, and Mathematics (STEM). Teachers and schools are looking to meet these expectations by providing students with opportunities for hands-on, project-based learning. The ARRL's Teachers Institute (TI) offers teachers a professional development opportunity that equips them with training and resources for exploring a variety of applications of radio science and wireless technology.

### Fund a Seat at the Teachers Institute!

Consider the impact one enthusiastic teacher can make on a classroom or several sections of students during a school year. You can help that teacher make a difference by funding his or her seat at the Teachers Institute. With your help, ARRL can continue this important work of training teachers and inspiring young people with Amateur Radio in their classrooms.

Direct costs to provide for travel, accommodations, instruction, and resources for one teacher at the TI are \$2000 – \$2500. The Teachers Institute is supported by donations to the Education & Technology Fund. ARRL President Kay Craigie, N3KN, herself an enthusiastic donor to the Education & Technology Program, explains her personal passion for this program in her letter to ARRL members at [www.arrl.org/education-and-technology-fund](http://www.arrl.org/education-and-technology-fund).

Donations from the ham radio community have helped the ARRL Education & Technology Program provide teacher training to more than 650 teachers since the inception of the Teachers Institute in 2004.

Let's keep a good thing going, one teacher at a time!

In 2015, the ARRL Education & Technology Program (ETP) will offer three introductory TI sessions and one advanced seminar during June and July. *Introduction to Wireless Technology* (TI-1) sessions will be hosted by Parallax, our robotics partner, in Rocklin, California; by the Dayton Amateur Radio Association in Dayton, Ohio, a generous supporter from the Amateur Radio community; and the ARRL at its Newington, Connecticut headquarters. These expenses-paid professional development seminars present tools and strategies, including Amateur Radio, to introduce students to many STEM related concepts.

During the 4 days of the TI-1, teachers will have the opportunity to gain a solid understanding of basic electronics and radio science. TI-1 also includes a hands-on introduction to microcontrollers and basic robotics, and, new this year, an introduction to RFID technology.

Previous graduates of TI-1 can expand their STEM skills by attending the 5-day *Remote Sensing and Data Gathering* (TI-2) seminar, which will be offered at ARRL Headquarters in late July.

The TI-2 seminar features a marine research buoy outfitted with sensors. The buoy is a hands-on project that each teacher assembles and programs. This "do it yourself" activity trains the teacher in how electronic sensor data is converted into usable information about the environment, how the microcontroller is programmed to sample the data, how to configure APRS



Teachers at the Dayton TI-1 assemble the Boe-Bot® robot, which they will use to learn micro-controller programming and robotics.

to send and receive the data, and how to upload the data into *Excel* for evaluation and analysis. In the classroom, students can learn about remote telemetry by programming the buoy themselves and deploying it in a local body of water to do environmental research. The expanded TI-2 curriculum for 2015 will also include an introduction to the MAREA ([www.arrl.org/marea](http://www.arrl.org/marea)) activity, and additional training in gathering satellite telemetry data with classroom applications to math and science topics.

The Teachers Institute is open to teachers of grade levels 4 – 12, as well as post-secondary educators. We look for teachers who have a vision of how to apply this wireless technology training to support STEM learning in their classrooms. Interested teachers will find more details and applications at [www.arrl.org/ti](http://www.arrl.org/ti). Applications are due by May 1, 2015.

### 2015 Teachers Institute Schedule

Dates	Location
<b>TI-1 Introduction to Wireless Technology</b>	
June 22 – 25	Parallax, Rocklin, CA
July 7 – 10	ARRL Headquarters, Newington, CT
July 13 – 16	Dayton Amateur Radio Association, Dayton, OH
<b>TI-2 Remote Sensing and Data Gathering</b>	
July 20 – 24	ARRL Headquarters, Newington, CT