

**TI participants come from schools across the US. Here are some comments shared in recent evaluations:**

"...the agenda was jam-packed with ideas and technical information to assist teachers in engaging students in the STEM (Science, Technology, Engineering and Mathematics) curriculum. The entire week was very stimulating as we participated in numerous hands-on activities, including live contacts via amateur satellites and the building and programming of model robots."



"[The TI] enhanced the knowledge I had about technology and now I have new – and better – ways to teach my students in many areas."

"This workshop was worth every second. Out of hundreds of workshops, this was the first workshop that held 100 percent of my attention 100 percent of the time. It was one of the few workshops that I have attended that will dramatically impact my classroom. Thank you so much!"

"A very large amount of information presented in a very short amount of time in a manner that was understandable and usable."

"My primary objectives were to better understand the basic theory and application of sensor and radio link technology in remote and robotic systems and to be able to incorporate these in future design projects....I have a LOT yet to learn about designing, implementing, and teaching remote sensing instrumentation and analysis, but this workshop has given me a solid start."

"We had a very knowledgeable instructor who could put the material on a level for all to understand. He also had a plethora of applications for all of the content we were learning."

"The workshop...provided both the knowledge and a cost effective way to...implement electronics, robotics, and radio into my physics classroom."

"I have been an educator for 10 years and I have attended many workshops, symposiums and training classes. This has been the most dynamic, enthusiastic, hands-on and most applicable to career technical education for me!"



**Once you have experienced the TI-1, consider the TI-2!**

**TI-2 Remote Sensing and Data Gathering (open to 10 participants)**

This advanced Institute focuses on the basic electronics of sensors (temperature, pressure, position, humidity, etc.), the analog to digital conversion of sensor data, the micro-controller programming involved in accessing sensors and the use of radio to connect sensor outputs to the user. Once the basics of remote sensing are introduced, teachers assemble a buoy system for deploying sensors to do environmental studies.

The TI-2 also includes a demonstration of telemetry data gathering from the FunCube satellite and a discussion of applications of the data to math and science topics. TI-2 participants will learn how to configure the Boe-Bot® robot provided in the introductory workshop for MAREA—Mars Lander Amateur Radio Robotic Exploration Activity—operation. (Read more about MAREA on our website at [www.arrrl.org/marea](http://www.arrrl.org/marea).) It's a very full 4 days!

An Amateur Radio license is required to attend the TI-2, Remote Sensing workshop. Completion of the TI-1 is a pre-requisite.

**Application Deadline for all sessions is May 1, 2016.**

TI-1 Introduction to Wireless Technology	
Date	Location
June 20-24, 2016	Parallax, Inc., Rocklin, CA
July 25-29, 2016	ARRL Headquarters, Newington, CT
TI-2 Remote Sensing and Data Gathering	
Date	Location
July 18-21, 2016	Dayton Amateur Radio Assoc., Dayton, OH

For an application and more information about the Teachers Institute, please visit [www.arrrl.org/ti](http://www.arrrl.org/ti)



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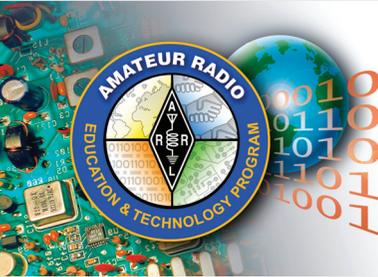
Learn more about what teachers are doing in their classrooms with Amateur Radio and with wireless technology topics at:

[www.arrrl.org/amateur-radio-in-the-classroom](http://www.arrrl.org/amateur-radio-in-the-classroom)

Please direct questions to:  
 ARRL Education Services Department  
[etp@arrrl.org](mailto:etp@arrrl.org) or (860) 594-0296

**Wireless Technology**

**ARRL's Teachers Institute on Wireless Technology 2016**



**Building Wireless Technology Literacy**

Explore wireless technology for your classroom and expand your horizons with a hands-on professional development experience!

- Electronics
- Robotics
- Amateur Radio
- Space Communications
- Microcontrollers
- Sensor Technology
- and more!

**Apply Now!**



Sponsored by The ARRL Education & Technology Program and funded by donors to the Education & Technology Fund at

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## At the Teachers Institute, teachers have the opportunity to explore and experience firsthand:

- Wireless technology basics and the foundation of radio science
- Techniques to instruct the basic electronics of radio
- Concepts integral to microcontrollers and robotics
- Satellite communications and telemetry data
- Sensor technology
- Data gathering and analysis

### Make the connections between science and math concepts and the engineering and technology applications of those concepts... real STEM instruction that will result in real student learning!

Two expenses-paid sessions of the TI-1 are offered in 2016 to qualified applicants.

Enrollment for each TI-1 session is limited to 12-14 participants to maximize participation and individual attention.



### Goals of the ARRL Teachers Institute:

- Understand wireless technology fundamentals;
- Acquire the tools needed to effectively teach wireless technology concepts;
- Utilize hands-on instructional approaches and technologies to integrate science and math;
- Achieve success in teaching wireless technology concepts and using wireless technology tools in the classroom.

### Cost:

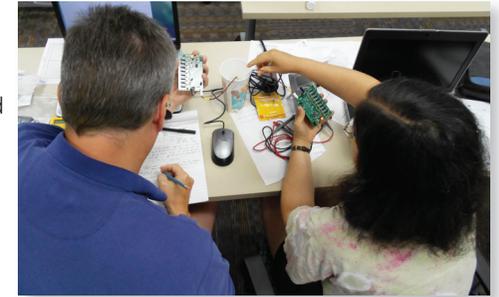
Tuition, resources and most expenses to attend either an introductory TI-1 or advanced TI-2 are paid by donations to the ARRL Education & Technology Program. Travel (up to \$600), and lodging expenses are reimbursed, and a per diem for meals is provided.



To qualify for full expense reimbursement, participants must complete all Institute activities.

A \$100 enrollment fee is required with the application. (Enrollment fees are refunded to applicants who are not admitted.)

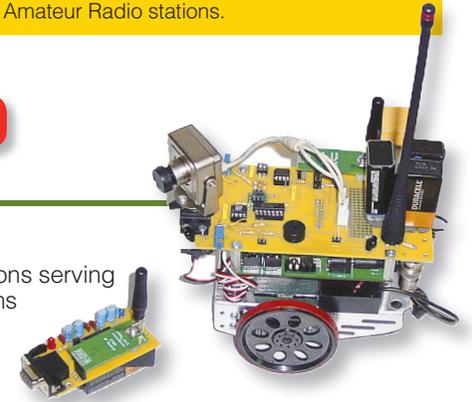
The Teachers Institute is supported through generous contributions to the ARRL Education & Technology Fund by individuals and Amateur Radio clubs, with additional in-kind support from equipment vendors. ARRL asks for donations to support the Teachers Institute and the Education & Technology Program. These donations fund tuition, resources and expenses of the Teachers Institute as well as equipment grants to schools for Amateur Radio stations.



**Apply Now!**

### Applicant Eligibility:

- Teachers active in school, college, or professional educational organizations serving grade levels 4-12+, or those leading school affiliated enrichment programs
- An Amateur Radio license is NOT required to attend the introductory TI-1
- An Amateur Radio license IS required to attend the advanced TI-2



### Format: Expect hard work at the Institute!

In 2016 the Teachers Institute (TI-1) will be a 5-day workshop. Each 8:00 am to 4:00 pm day is filled with lectures, hands-on activities and demonstrations, building, programming, robotics competition, and of course time is set aside for teachers to participate in Amateur Radio operating activities. Teachers are offered tools and strategies to introduce basic electronics, radio science, satellite communication and Amateur Radio, and an introduction to microcontrollers and basic robotics in their classrooms. Refer to our website ([www.arrl.org/teachers-institute-on-wireless-technology](http://www.arrl.org/teachers-institute-on-wireless-technology)) for an agenda and to download an application.

### Materials provided at the TI-1:

- ARRL Resource Library
- ARRL Electronics Instruction Resources
- Parallax "What's a Microcontroller?" kit
- Parallax PropScope®
- Parallax Basic Robotics (Boe-Bot®) kit

