

Real STEM instruction that will result in real student learning!

Make the connections between the engineering and technology applications of science and math concepts.

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



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

TI-1 Introduction to Wireless Technology	
Date	Location
July 15-19, 2019	Dayton Amateur Radio Assoc., Dayton, OH
July 22-26, 2019	ARRL Headquarters, Newington, CT
TI-2 Remote Sensing and Data Gathering	
Date	Location
July 8-12, 2019	ARRL Headquarters, Newington, CT

For an application and more information about the Teachers Institute, please visit

www.arrl.org/ti

Application Deadline for all sessions is May 1, 2019



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

www.arrl.org/amateur-radio-in-the-classroom

Please direct questions to:
ARRL Education Services Department
etp@arrl.org or **860-594-0367**

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



ARRL The national association for
AMATEUR RADIO®
225 Main Street, Newington, CT 06111-1400

Wireless Technology

ARRL's Teachers Institute on Wireless Technology



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!



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Cost:

Tuition, resources and most expenses to attend are paid by donations to the ARRL Education and Technology Program (ETP) Fund. 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. Donations fund tuition, resources and expenses of the Teachers Institute, as well as equipment grants to schools for Amateur Radio stations. Support the program with a donation at www.arrl.org/etp.

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 session.
- An Amateur Radio license is required to attend the advanced TI-2, Remote Sensing workshop.
- Refer to our website www.arrl.org/ti for an agenda and to download an application.



TI1 – Wireless Technology

The Teachers Institute (TI-1) is a 5-day professional development workshop filled with lectures, hands-on activities and demonstrations, building, programming, robotics, and exploration in Amateur Radio. Teachers are offered tools and strategies to introduce basic electronics, radio science, satellite communication, Amateur Radio, microcontrollers and basic robotics to their classrooms. Participants are provided with materials such as an ARRL resource library and robotics kits.

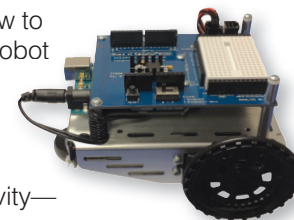
Two sessions of the TI-1 workshop are offered to qualified applicants. Enrollment for each TI-1 session is limited to 12-14 participants to maximize participation and individual attention.



TI-2 Remote Sensing and Data Gathering

This advanced Institute focuses on the basic electronics of sensors (temperature, pressure, position, humidity, etc.), the analog to digital conversion of sensor data, the microcontroller 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 amateur satellites, basic amateur satellite operation, and a discussion of applications of the satellite 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.



It's a very full 5 days!

Completion of the TI-1 session is a pre-requisite. Enrollment for the TI-2 session is limited to 10 participants to maximize participation and individual attention.