Still unsure if TI-1 is right for you?
Read testimonials from recent TI-1 graduates!

"My learning from TI-1 brought new STEAM ideas and opportunities, practical applications of wireless technology, and an enthusiasm for integrating amateur radio into education. **It formed a tangible connection to harder physical science concepts... elevated our STEAM curriculum** by bringing new resources and supplies... [and] it helped to showcase and ignite innovation."

— Megan Tucker (call sign: KQ4MAM) is a K—5th-grade teacher at Hillsboro Charter Academy in Purcellville, VA.

"**If you want your school and your teaching to stand out, TI will absolutely give you the tool set to do so.** Ham radio has helped to get students (and me!) interested [in] those units that are just a chore to get through because... they lack pizzazz and fun/interesting labs. Astronomy was boring. Now we track satellites, monitor space weather, and will soon be listening to Jupiter."

— Scott Valenta (call sign: W9DU) is a 6—8th-grade teacher at St. John the Baptist Catholic School in Winfield, IL.

"The most notable impact of TI for me was making efficient sense of amateur radio concepts that apply directly to the classroom. ...**Professional experience and "tried-and-true" teaching methods were shared, allowing me to bring productive hands-on learning back to the classroom instantly.** I was able to learn how to effectively foxhunt using a variety of techniques and — more importantly — how to actually teach students to do it in ONE DAY."

— Everton Henriques (Call sign: KD2ZZT) is a 9—12th-grade teacher at Staten Island Technical High School in Staten Island, NY.



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



Check out our STEM page for students at:
arrl.org/stem

Please direct questions to the ARRL Education & Learning Department at EAD@arrl.org or 860-594-0367

Scan the QR code to visit the current TI Applications & FAQ page.

The ARRL Education & Technology Program is funded by donors giving to the Education & Technology Fund.

ARRL The National Association for Amateur Radio®

The best time to **ELEVATE** your students' **STEM** experience is **TODAY**



We provide free equipment, live demos, and hands-on lessons on wireless technology to bring back to your classroom.

ARRL Teachers Institute on Wireless Technology

Sponsored by The ARRL Education & Technology Program

TI-1: Introduction to Wireless Technology

The **Teachers Institute (TI-1)** is a 4-day professional development workshop where teachers will be introduced to the basics of electronic principles, radio frequency propagation, and antennas. They will gain practical experience building simple electronic circuits and antennas. Additionally, the teachers will participate in a hidden transmitter hunting activity (aka foxhunting).

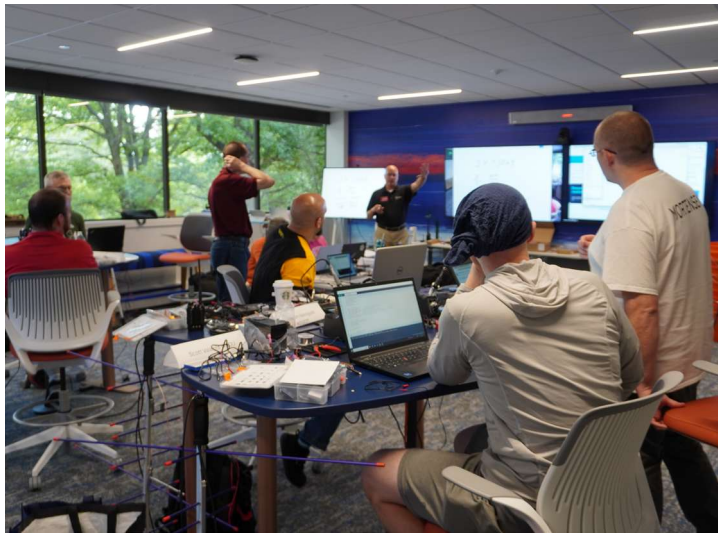
TI Elective Sessions

TI Balloons and Amateur Radio *New*

Teachers will learn to launch and track helium-filled pico balloons that have the potential to circle the globe. The balloons will be tracked via the Weak Signal Propagation Reporter (WSPR) network. The teachers will build the solar-powered, amateur radio-enabled balloon payloads consisting of a temperature sensor and GPS. The teachers will be introduced to concepts like high-frequency radio propagation, weather patterns, and solar energy. The teachers will also be introduced to the requirements of balloon launches in several U.S. states.

TI Space Comms & Radio Astronomy *New*

Teachers will learn how to make amateur radio contacts via amateur radio FM, linear satellites, and the International Space Station. They will learn how to capture weather satellite imagery directly from NOAA satellites. The teachers will build a radio astronomy system consisting of a dipole antenna array and



a software-defined radio capable of receiving radio signals from the sun and Jupiter. Additionally, they will be given a personal tour of MIT's Haystack Observatory.

TI Remote Sensors & Data Gathering *New*

Teachers will learn to build and program an electronic circuit that will remotely gather and transmit water and weather data using the amateur radio Automatic Packet Reporting System (APRS) to an internet site. The teachers will be introduced to Arduino C++ programming and the APRS network. They will also learn how to collect and analyze the data consisting of water and air temperatures, barometric pressure, GPS, and remaining battery life. The teachers will also learn about analog to digital principles and Very High Frequency (VHF) propagation.

Do I qualify for TI-1?

To qualify, applicants must be an active U.S. K—12 schoolteacher, an instructor at a college or university, or they must be in a leadership or enrichment instruction role in an after-school or collective homeschool program. An amateur radio license is NOT required for TI-1. It is required only to attend a TI Elective session.

How much does it cost to attend a TI Session?

There is a $100 enrollment fee required for each attendee accepted into a TI session. This fee grants the attendee a 1-year ARRL membership, including a 1-year PRINT subscription of *QST* to share with students. It also enrolls the attendee in ARRL's teacher discount program for the year. Membership is non-refundable.

ARRL provides reinbursement for travel (up to $600), lodging expenses, and a per diem for meals. Participants take home several classroom materials, access to an online library of lesson plans, and a selection of ARRL reference books to support student learning for free!

All additional costs and expenses are paid by donations to the ARRL Education and Technology Program (ETP) Fund.

What is a workshop day like for educators?

Attend a class that is dynamic in experiences and rich with a community of teachers who love to learn just like you. Be prepared to hear a lecture and see a demo, and then immediately apply the concepts in practice. All teachers will engage in several hands-on learning activities, projects, and experimentation before taking their newfound knowledge, resources, and equipment back to their school communties.





