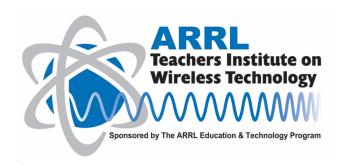# ARRL's 2021 Virtual Teachers Institute

OVERVIEW:

ARRL's Teachers Institute 2021 will be offered virtually during the week of July 12, 2021. There will be a combination of live and recorded sessions, providing classroom teachers with a variety of activities related to wireless technology and amateur radio. These activities will give teachers practical lessons that they can take back to their classrooms. Pre-registration is required (and all registrants will receive a box of necessary materials, along with additional materials that participants must acquire on their own.)

AGENDA:

Monday July 12

Welcome to TI 2021!
During this introduction to Teachers Institute 2021, you'll hear a brief overview of this year's event, meet your instructors for the week, and receive a brief welcome from ARRL CEO David Minster, NA2AA.
Presenter: Teachers Institute Team
Time: 11:00am ET

A Quick Intro to Basic Electronics
Explore the relationship between electricity and magnetism, the basis for all electronics. Learn the relationship between voltage, current, and resistance (Ohm's Law), and construct simple circuits to demonstrate the function of both passive and active electronic components.
Presenter: Larry Kendall, K6NDL
Time: 12:00pm ET

Intro to Programming with Python part 1
Join us for a beginner's introduction to programming with Python on the micro:bit platform. Learn how to write code, display values, and make a simple program.
Presenter: Tommy Gober, N5DUX
Time: 2:00pm ET

Talking to Astronauts: An Elementary School's Exciting ARISS Contact
Overview of steps taken to initiate a contact via amateur radio (AR) between your school and the International Space Station (ISS). This will be an airing of a pre-recorded webinar and Q&A presented by Diana Warner, KE8HLD and followed by an additional 15 minutes of live Q&A.
Presenter: Ally Flynn, KM3ALF, and Diane Warner, KE8HLD
Time: 3:00pm EET

Satellite Tracking Basics
Use software to predict when satellites like the ISS will be overhead at your location. Learn the fundamentals and basic set up so you will find success with almost any tracking software available.
Presenter: Matt Severin, N8MS
Time: 4:00pm ET

Tuesday July 13

Taking Radio on the Go
Amateur Radio is more than having a shack at home. Radio makes for a great outdoor activity as well. Learn about some of the options for taking amateur radio with you on the go.
Presenter: Steve Goodgame, K5ATA
Time: 11:00am ET

DIY 2-meter Yagi Antenna Building
Using simple tools and materials, construct a 2-meter "tape measure" Yagi antenna suitable for fox hunting (hidden transmitter finding) and amateur satellite tracking.
Presenter: Larry Kendall, K6NDL
Time: 12:00pm ET

Intro to Programming with Python part 2
Join us as we continue to dive into programming with Python to build more complex programs to read sensors and solve problems.
Presenter: Tommy Gober, N5DUX
Time: 1:00pm ET

Soldering as Art and Science
Learn the basic materials, tools, and techniques of through-hole soldering, with an emphasis on quality and safety.
Presenter: Larry Kendall, K6NDL
Time: 2:00pm ET

Youth and School Club Licensing
Interested in getting students licensed? Maybe you want to start a school club? Learn some strategies and tips about how to help make that happen.
Presenter: Steve Goodgame, K5ATA
Time: 3:00pm ET

Wednesday July 14

Sampling, from A to D
It seems that everything today is going digital. How is information converted to digital format, and what are the advantages of doing so? We'll illustrate the process using simple pencil and paper (and spreadsheet) exercises that you can use with your students.
Presenter: Larry Kendall, K6NDL
Time: 11:00am ET

Getting Started with Weather Sensors
Python and ADC in the real world: you have the skills, now let's build something! We'll use your micro:bit to begin collecting weather data: temperature and wind speed.
Presenter: Matt Severin, N8MS
Time: 12:00 PM ET

What is Morse Code and Why Do Kids Love It
Morse Code was invented in the 1800s and became the backbone of international communications until the 1970s, when the advent of satellites, fax and then cell phones diminished its use. Come find out how it is still in use today in the amateur radio community and why kids love to learn it.
Presenter: Howard Bernstein WB2UZE, Jim Crites, W6JIM, and Robb Zarges K2MZ, from the Long Island CW Club
Time: 1:00pm ET

Learn How to Build a Working Radio from a Kit
With this kit, you will build a tunable and volume-controlled radio receiver with an approximate frequency range of 40 MHz to 150 MHz. Pick up transmissions from nearby AM/FM radio stations, Air Traffic Control Towers, and similar transmitting sources. It has been featured at various amateur radio events such as Orlando HamCation and is now available to the public from ARRL. You'll get step-by-step instructions for building a kit that will help you and your students learn about radio electronics and related technology.
Presenter: Paul Cianciolo, W1VLF, ARRL Laboratory RFI Engineer
Time: 2:00pm ET

Thursday July 15

Radio Lingo
When listening to amateur radio signals on the air, a new listener may hear several terms, letters, and numbers that seem confusing or cryptic. In this session we'll demystify the lingo heard on the air.
Presenter: Tommy Gober, N5DUX
Time: 11:00am ET

Software Defined Radio (SDR)
Using only your computer, you'll be able to 'listen in' on radio signals across the electromagnetic spectrum. We'll walk you through the setup of a basic SDR to get you on the air.
Presenter: Matt Severin, N8MS
Time: 12:00pm ET

What's That Sound?
What are all those other sounds you hear on radio frequencies? Learn to identify some of the common chirps, whistles, hums, and other types of radio signals you encounter as you tune across the radio spectrum.
Presenter: Larry Kendall, K6NDL
Time: 1:00pm ET

Dual Servos
Using the power of Python programming and the microbit, we will learn to control two small servos to track the position of a satellite as it passes overhead.
Presenter: Tommy Gober, N5DUX
Time: 2:00 pm ET

Guided Tour of W1AW
Maxim Memorial Station W1AW, located in Newington, Connecticut was established to honor the memory of ARRL's co-founder and first president, Hiram Percy Maxim. Although the first radio station of the ARRL was actually located in Hartford, Connecticut and active as W1MK, W1AW in Newington is known worldwide and considered the radio station most associated with Hiram Percy Maxim.
Presenter: Joe Carcia, NJ1Q, W1AW Station Manager
Time: 3:00pm ET