AWA EDUCATIONAL INSTITUTE

Radio Fab Lab – June - August 2024 - Hands-on Workshops
SATURDAYS 1:30 PM to 3:30 PM

TEN STEM workshops of making, exploring, and FUN...for ages 9 - 16

SECTION A:

RFL-1 June 8, 2024: Introduction to Electronics and Building Basic Circuits
- An introduction to electricity, circuit components, Ohm’s Law, and measurements using a digital multi-meter provided to students in their tool kits for them to take home
- Tour the Museum and learn about 200 years of communication technologies

RFL-2 June 15, 2024: Telegraph, Morse Code & Build a Code Practice Oscillator
- Learn the history of the telegraph and learn Morse Code
- Build an electronic circuit to send Morse Code – a Code Practice Oscillator and take it home

RFL-3 June 22, 2024: Catch the Waves and Communications in an Emergency (EARS)
- Learn about the amazing properties of waves, how to make them, measure them, and use them to communicate information.
- Communications in Emergency – Amateur Radio

RFL-4 June 29, 2024: Build a Crystal Transmitter Using a Transistor
- Learn about transistors and the basics of radio transmitters
- Build and test a crystal transmitter and listen to your signal at the Museum

RFL-5 July 20, 2024: Build a Photon Transmitter and Receiver
- Build a photon transmitter & receiver that sends & receives light waves encoded with music & voice
- Learn about light emitting diodes (LEDs) and apply knowledge of amplitude modulation
- Work with a laser measurement system. Light can be used to measure tiny objects like individual molecules and living cells. Light is "tiny" and can be used to "see" things that radio waves can’t.

SECTION B:

RFL-6 July 27, 2024: Tool Time and Prototyping
- Learn how to create projects from scratch by building the beginnings of a more complex circuit and then layout/cut a wood board, measure components, cut/strip wires for electrical connections, etc.
- Learn to solder connections
- This will empower the student to build their own projects without needing to purchase an expensive kit.

RFL-7 August 3, 2024: Power Supplies
- Direct Current vs. Alternating Current – what is the difference and how are they used
• Transformers – what do they do and do they work
• How do diodes, capacitors and voltage regulators work in a power supply

RFL-8 August 10, 2024: Build an AM/FM radio
• Capacitor and inductor – energy bounces back and forth at a resonant frequency. Adjusting a tuned circuit - inductor or capacitor to tune different frequencies
• Modulation – frequency modulation (FM) vs. amplitude modulation (AM)
• Assemble a AM/FM stereo radio

RFL-9 August 17, 2024: Introduction to Computer Science
• Explore the fundamentals of computer science
• Learn about analog computers and build one
• Learn to use logic to program a computer

RFL-10 August 24, 2024: Build a computer
• Build a digital computer, based on logic gates, to add two 4-bit binary numbers
• Learn about the Internet of Things and how they connect with our lives
• Hear about quantum computers and how they'll make artificial intelligence work

COST PER SECTION: $ 125 for 5 classes

Workshops are held Saturdays 1:30 pm - 3:30 pm at
AWA Museum, 6925 Routes 5/20, Bloomfield, NY
For more information and registration form, visit:
http://www.antiquewireless.org/homepage/2024-radio-fab-lab/
Adult attendance is recommended; required for students under 12.

Send questions to RFL@AntiqueWireless.org