Raspberry Pi & Python Summer Camp Syllabus

Grades 9 - 12
Dates: 6/8/2026 - 6/12/2026
Time: 9:00am - 12:30pm
Location: Delta Innovation Workspace
Cost: $150
Required Materials: A laptop, preferably a mac or linux based machine

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Course Overview

Students will set up and configure a Raspberry Pi from scratch, learn core Linux and Python skills, connect to real-world hardware through GPIO, and ultimately publish a live web app to the internet, all in one week. By the end of the week you'll have built something real: a live webpage, accessible from anywhere in the world, powered by a tiny computer you set up yourself. No prior Raspberry Pi experience needed, just bring your Python skills, a laptop, and your curiosity.

Day	Day Overview	Key Concepts
Day 1 Pi Setup & Dev Environment	Get your Pi up and running with no monitor needed. You'll flash the OS, connect over SSH, learn your way around the Linux command line, and set up VS Code as a remote dev environment. By the end of the day you'll be writing and running Python code on hardware you configured yourself.	• Operating systems • Command line interface • SSH / headless computing • File paths & permissions • Dev environment setup
Day 2 GPIO & Sensors	Connect your Pi to the physical world. You'll wire up an LED on a breadboard and control it with Python, then hook up a DHT22 sensor and read live temperature and humidity data to the console. A good introduction to how software and hardware work together.	• GPIO pins • Digital signals & wiring • Libraries & pip installs • Real-time loops • Hardware debugging
Day 3 Local Web Server	Take the sensor data from Day 2 and serve it as a webpage. You'll build a minimal web server with FastAPI, create a route that returns live readings, and display them in a simple HTML page running on your Pi. Anyone on the local network can view it in their browser.	• HTTP requests & routes • APIs & endpoints • HTML basics • FastAPI • Client vs server
Day 4 Going Live & What's Next	Use ngrok to expose your local server to the internet and share a live URL with the class. Then take a look at other sensors and GPIO options available to explore on your own. Finish the day scoping out what you want to build on Day 5.	• Tunneling • Public vs local networks • ngrok • GPIO landscape • Project scoping
Day 5 Free Build Day	Apply what you've learned to a project of your choosing. Add another sensor, improve the webpage, combine GPIO and web in a new way whatever direction interests you. Finish with a short demo to the group.	• Independent problem solving • Debugging & iteration • How to keep learning