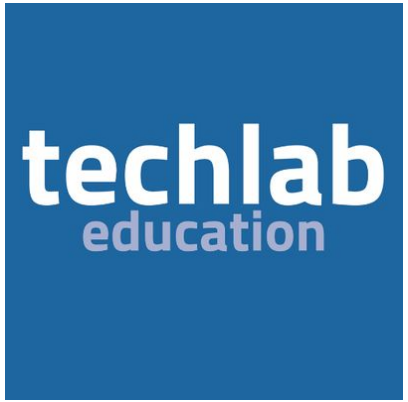


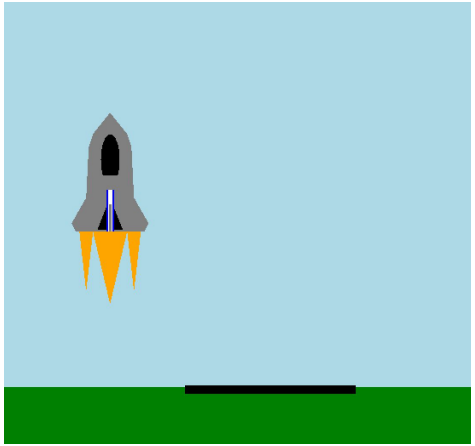
Curriculum and Course Information

Maker Classes - Arduino, Raspberry Pi, Google Home

What is our teaching philosophy?

Students will...

- Watch code come alive
- Experience visual and interactive learning
- Work on problem solving skills



Arduino Classes

- Ages 10+
- Offered all nine weeks
- Meant for beginners with no experience with coding
- We start with having kids code in Arduino IDE
- Learn basics of wiring, sensors, motors, etc.
- Hands-on projects — make projects that have real-world impact in the IoT space

Arduino Course Outline

What they Learn	What they develop
• Arduino overview & structure • Wiring and intro circuitry • LEDs - output sensors • Intro programming in Arduino IDE	• LED blinking on breadboard • Traffic lights • Advanced: Morse code encoder
• Input sensors • Advanced programming logic and design thinking	• Control a servo with a button • Moisture sensor - serial monitor output • Advanced — LED Matrix: letters, numbers, etc. (http://www.instructables.com/id/4x4x4-LED-Cube-Arduino-Uno/)
• More sensors incl. Servo motors • If else statements • Analog and digital reads	Temperature sensor — serial monitor
• Design thinking & capstone project • Documentation	Capstone Project & Project Documentation
• Capstone	Capstone

Raspberry Pi/IoT Classes

- Ages 11+
- Small class size- up to 8 students
- 1 week program
- Students will build their own Google Home and learn how to connect maker devices to the IoT

Pi Course Outline

What they Learn	What they develop
• Overview of Raspberry Pi • OS/UNIX environment • GPIO & Wiring	• Play around with Pi on connected monitor • SSH in remotely
• GPIO & wiring • Sensors & motors • Python sandbox • OS & python: installing libraries	• Control sensors/motors from Python sandbox
• Intro to the IoT - Python Flask - web servers and the Internet • Work with Python to create projects • Intro to Design thinking	• Control your Pi status LED through a website button

• Design thinking contd & capstone intro
• Documentation
	Capstone Project & Project Documentation
	• Ideas - control a motor with your phone
	  ○ Post sensor data to website
	  ○ Send a text with sensor data
	  ○ Send email alerts with sensor data
	  ○ Connect video camera feed to website

• Capstone	Capstone

Google Home Classes

- Ages 12+
- Students will build their own Google Home and learn how to connect maker devices to the IoT

Google Home Course Outline

What they Learn	What students do
• Arduino overview & structure • Wiring and intro circuitry • LEDs - output sensors • Intro programming in Arduino IDE	• LED blinking • Traffic lights w LEDs • Advanced: Morse code encoder
• Hardware • Input sensors & motors	• Control a servo with a button • LED Cube (http://www.instructables.com/id/4x4x4-LED-Cube-Arduino-Uno/)
• Build the Google Home Kit	• Configure the voice bonnet and Raspberry Pi and speaker/wires (provided w Google kit) • Connect to kit remotely using remote shell
• Google Home demo	• Connect kit to google account and assistant cloud services • Working voice demo
• Extend Google Home Functionality	• Use Raspberry Pi (included w Google Kit) to turn on LEDs and other sensors