



# STEM Electronic Starter Kit *Syllabus*

## Course Overview

This course uses a hands-on approach to introduce students to the fundamentals of electronics and programming. Students will explore using an Arduino microcontroller, a breadboard, and various components to build and program circuits that form the foundation of modern electronics.

This course contains over 35 hours of curriculum content on STEM (Science, Technology, Engineering, and Mathematics) hardware. From creating circuits with resistors, and powering motors and fans, to coding and controlling circuit functions.

## Course Objectives

By the end of this course, students will:

- Understand the components included in a STEM electronic starter kit.
- Learn how to assemble circuits using a breadboard and wires.
- Program an Arduino to control electronic components.
- Apply coding and problem-solving skills to real-world electronic projects.
- Gain confidence in debugging circuits and code.

## Course Outline

### Lesson 1: Introduction to STEM

- INTRO PAGE
- 1.1 - Your Kit
- 1.2 - Arduino
- 1.3 - Breadboard
- 1.4 - First Circuit
- Quiz 1

## Lesson 2

- 2.1 - Wiring Blinking Light
- 2.2 - Learn the Code
- 2.3 - Adding Code
- 2.4 - Blink the Lights
- Quiz 2

## Lesson 3

- 3.1 - Dim the Light
- Quiz 3

## Lesson 4

- 4.1 - Chip Explained
- 4.2 - Wiring
- 4.3 - Adding Code
- 4.4 - Learn the code
- Quiz 4

## Lesson 5

- 5.1 - Traffic Light
- 5.2 - Adding Code
- Quiz 5
- Lesson 6
- 6.1 - Motor Button
- Quiz 6

## Lesson 7

- 7.1 - Light Dimmer
- Quiz 7

## Lesson 8

- 8.1 - Temperature
- 8.2 - Adding the Code
- Quiz 8

## Resources

Required:

- STEM Electronic Starter Kit (includes Arduino, breadboard, wires, LEDs, resistors, potentiometer, and motor)
- Computer with USB port for Arduino programming
- Arduino IDE (free software download)