

# Robotics & 2D Game Programming with Python

Instructor:  
Todd Sparrow  
Tuition: \*\*\*  
\$100: per semester  
Credit:  
1 CS credit\*  
Homework:  
3-4 hours per week

**Robotics Programming** – This course explores the world of robotics using Edison, a small self-contained robotic learning platform. This course introduces students to several ways robots sense the environment through light, sound, and vibration using sonar, infrared emitters and detectors and light detection. Students will program their robots using web-based programming languages using both drag-and-drop tools including Scratch to advanced techniques with Python. Students will learn the basic programming structures of statements, variables, loops and more. Textbook: All text for lessons, exercises and projects will be available on the online class portal. In-class assignments and worksheets will be handed out each week.

\*\*\*Robotics Kit Required: \$100 (Students will keep this kit).

I will order class robotics kits in a group purchase.



**2D Game Programming** - is a 16-week hands-on workshop where students build a complete side-scrolling platformer game from the ground up using Python and Pygame. Starting with a blank screen in week one, students progress through game loop architecture, keyboard input, collision detection, physics (gravity and jumping), tile-based level design, sprite systems, enemy AI, HUDs, sound integration, and full game state management — culminating in a polished 3-level platformer they can showcase and share.

## Requirements and Expectations:

These courses are for 8th-12th grade. High school credit is only available for 9th-12th. No previous programming experience is necessary. Students must have reliable internet access at home and access to a printer to complete this course. High-speed internet is recommended for installation and usage of all course software. Students should be progressing towards a minimum touch-typing rate of 20 wpm.

## Textbook:

TBD approx. \$35

## Supplies:

\*\*\*Robotics Kit: \$100 (Students will keep this kit) - Robotics class only

Compatible\*\* Laptop: (non-Chromebook) with WiFi.

## Software:

All required software is free and open-source. There will be a pre-class assignment which will be required that guides student (or parent) through installing the necessary software for this course.

\* This course will satisfy 1 CS (Computer Science) credit required for graduation in Tennessee. This courses will satisfy the Tennessee computer science credit required beginning in the 2024/25 school year.

\*\* The full listing of the laptop requirements can be found by visiting: <https://wlink.to/ceectech>