

**Computer Science -- Thursday 11:20-12:20**  
**Grade Level: 7-12 -- Teacher: Kristi Horton -- Student Fee: \$60**

Students will learn and apply fundamental concepts of electricity, physics, logic and programming, and multimedia and graphics in 4 units of learning throughout the school year.

The four major units are:

- **Circuits and electronics (groups may choose from one of the following projects)**
  - Light up music box
  - Light up arcade game
  - Electronic Picture frame (extra equipment purchase)
  - Program electronic display (extra equipment purchase)
- **Physics**
  - In video games
  - In guiding robots/vehicles
- **3D animation/Building 3D environments**
  - designing virtual reality environments (view a room in 3D/360degree view)
  - Programming 3D characters in “stories” or games
- **Demonstrations of various computer science topics**
  - Machine learning and Artificial Intelligence
  - Solving crime with computers
  - Cybersecurity and Internet Safety
  - Software Engineering
  - Hardware and Electrical Engineering
  - Data Analytics

**Students will gain:**

**Knowledge:** Students will learn and apply the principles of electrical engineering, engineering design, physics, graphics and multimedia.

**Skills:** Students will discover new uses for common household items, will learn how computers work, and will practice programming and graphics skills necessary in today’s and tomorrow’s workplace. Students will also learn team building skills.

High school students will gain experience in leading a small team and will use the fundamental skills in team and project management.

**Required Material:**

There will be instruction videos to watch and packets for students to read. The student fee will cover software and equipment. Students will need access to a computer with Internet access. Mrs. Horton recommends parental supervision for any activities online. Some projects may require the gathering of common household items like Christmas lights, glue, tape, batteries, or other small items. The specific items needed will depend on each individual group’s design for the project.

**Required Homework:**

Student may be assigned to watch instruction videos or to read an idea packet and bring a list of ideas to class. While not required, groups may wish to connect or meet to discuss their projects outside of class. Mrs. Horton will introduce students to design software that is free or included in the cost of the lab fees.