

13 Electronic components and programming

Content Area: **Technology**
Course(s):
Time Period: **Full Year**
Length: **4 Week**
Status: **Published**

General Overview, Course Description or Course Philosophy

This full-year course continues to emphasize the application of integrated STEM (Science, Technology, Engineering and Mathematics) principles and the design method introduced in the 1st year technology course. This course is taught on the foundations of technology education having students invent solutions to real-world problems through robotic applications. Students will identify problems, research, design and fabricate solutions. Problem solving, critical thinking and design skills are taught through various activities. Hands-on themes include structural and robotic systems, as well as system control technology. This course provides all students with valuable skills such as: problem solving, design, creative thinking, systems thinking, teamwork, documentation, programming, and computer applications.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Electron flow can be controlled and utilized to produce useful outcomes.

CONTENT AREA STANDARDS

TECH.8.2.12.C.7	Use a design process to devise a technological product or system that addresses a global problem, provide research, identify trade-offs and constraints, and document the process through drawings that include data and materials.
TECH.8.2.12.D.1	Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

STUDENT LEARNING TARGETS

Declarative Knowledge

Identify and describe a variety of electronic components including but not limited to breadboards, resistors, capacitors, transistors, LEDs, jumpers, switches, motors, etc.

- Recognize and select code for use with electronics coding projects.

Procedural Knowledge

Students will be able to:

Wire basic circuits and describe what is happening from a technical aspect.

- Duplicate and explain simple electronic circuits.
- Duplicate and write code for electronic circuits.
- Redesign electronic circuits and code in order to problem solve.

EVIDENCE OF LEARNING

Formative Assessments

Component quiz

Resistor value quiz

Electronic Activities Worksheets

Ohm, Volt, Watts, calculations

Summative Assessments

Transistor Coding

Design Problem

Unit Test

RESOURCES (Instructional, Supplemental, Intervention Materials)

Teacher Presentations available through Google Classroom/Drive.

Teacher made quiz and project rubric.

INTERDISCIPLINARY CONNECTIONS

ELA: Logbooks

Educational Technology: Use of Google resources

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.