*Unit 4 Block-Based Programming

Content Area: **Technology**
Course(s): **Robotics**
Time Period: **December**
Length: **7 blocks**
Status: **Published**

Enduring Understandings

1. Robots must be told what to do through written codes called programs.

2. Programming allows a robot to sense the world around it and take predetermined actions based on its environment.

3. A programming language follows specific rules so that the robot interface can properly interpret the code.

4. A program must be written to accommodate for every possible scenario to avoid infinite loops.

5. Many functions in a program contain variables that can be adjusted to provide fine control of outputs.

Essential Questions

1. How does a robot work?

2. How can a robot sense the world around it?

3. Why are there rules, such as specific formatting, when writing programs for robots?

4. How can infinite loops be prevented?

5. How can variables be used with functions to provide control?

Content

Vocabulary: Programming language, code, coding, sensors, inputs, outputs, servo motor, variables, routines, subroutines, loops, infinite loops, wait states, jumps

Skills

1. Handwrite a script for a robot to follow that accounts for multiple scenarios.

2. Write a program using the Lego interface that can control an output.

3. Write a program using the Lego interface that can interpret inputs.

4. Create a program that can interpret multiple inputs and control multiple outputs.

Resources

Desktop computers

Block-based programming software

Robotics platform compatible with programming software

Robotics platform peripherals

Standards

TECH.8.2.12.D.CS1	Apply the design process.
TECH.8.2.12.E.1	Demonstrate an understanding of the problem-solving capacity of computers in our world.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.4	Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.