

# STRANDS AND STANDARDS

## CREATIVE CODING



### Course Description

*Creative Coding through Games* is a first-semester course for introduction to programming for the early secondary grades. The course is designed to attract and reach a broad and diverse range of students, including those who may have never considered programming. Students learn how to code by working in a real software development environment to design and program games. Learning to code by creating real products, students discover how to make amazing things and have an impact on their world.

<b>Intended Grade Level</b>	6-8
Units of Credit	0.5
Core Code	35.02.00.00.003
Concurrent Enrollment Core Code	N/A
Prerequisite	N/A
Skill Certification Test Number	N/A
Test Weight	N/A
<b>License Area of Concentration</b>	CTE and/or Secondary Education 6-12
<b>Required Endorsement(s)</b>	
Endorsement 1	No Endorsement Required
Endorsement 2	N/A
Endorsement 3	N/A

## STRAND 1

### Design

#### Standard 1

##### *Problem Solving Process*

Students will demonstrate knowledge of the four steps of the problem-solving process.

1. Define Problem
2. Prepare Solution
3. Try Solution
4. Reflect on Outcome

#### Standard 2

##### *Algorithms*

Students deconstruct a task into an algorithm (simple steps).

Students write an algorithm as pseudocode.

#### Standard 3

##### *Development Process*

Students demonstrate knowledge of the development process.

1. Plan
2. Design
3. Build
4. Test
5. Publish

### Performance Skills

Students will deconstruct a task as an algorithm and write it in pseudocode.

## STRAND 2

### Game Development

#### Standard 1

##### *Game Concepts*

Student will explore genres of computer games.

- action, adventure, role-playing (RPG), simulation, strategy, hybrid

Students will demonstrate knowledge of player perspectives.

- First Person, Third Person, Top-Down, 2D, 3D

Students will demonstrate knowledge of the elements of a computer game.

- characters, storyline, strategy, danger, rewards

Students will regularly include #comments for the purpose of explaining, organizing, instructing, and ascribing.

**Standard 2***Sprites*

Students will define a sprite and identify the types of sprites used in a game.

- character, background, text
- static, animated
- player/hero, enemy, obstacles, projectiles, food, rewards

Students will create unique variables for each sprite.

Students will apply gaming coordinate system knowledge to intentionally position sprites.

Students will demonstrate knowledge of sprite properties by controlling them with arguments in the code. (i.e. size, color, position)

**Standard 3***Motion*

Students will use loops to code iterations in a game. (i.e. spinning, shrinking, growing, positioning)

Students will write code to control a sprite's velocity, acceleration or gravity.

Students will create a sprite animation and use it in a game. (i.e. frame by frame, looping)

**Standard 4***Control*

Students will code events to allow the user to interact with a game. (i.e. mouse click, keystroke)

Students will code conditionals to create collision events. (i.e. score, lives)

Students will incorporate user input in a game. (i.e. guessing a number, choosing an adventure, madlibs)

**Standard 5***Randomization*

Students will write code to randomize behaviors in a game. (i.e. sprite images, position, color and size)

Students will control randomization with ranges in code.

**Standard 6****Enhancements**

Students will create and call functions to customize a game.

Students will write code to enhance the user experience.

- creative openers/endings
- backgrounds (static/scrolling)
- timer
- sound/music

**Standard 7***Game Creation*

Students will participate independently or collaboratively in the development of a computer game that incorporates a development process and applies concepts learned throughout the course.

**Performance Skills**

Students will develop and code a game.

## Possible Resources:

<https://arcade.makecode.com>

<https://education.minecraft.net/en-us>

<https://code.org/>

<https://makecode.microbit.org/>

<https://www.robotink.com/>

[www.adafruit.com](http://www.adafruit.com)

## Workplace Skills

These skills will be incorporated into the classroom:

- Communication
- Problem Solving
- Teamwork
- Critical Thinking

## Skill Certification Test Points by Strand

As this is a course for 6th and 8th grade students, a state skills certification is not required.