MASTERY
— CODING —

Introduction to Game Development

Course Syllabus

Introduction to Game Development Syllabus

General Overview

The IGD acts as a introduction to the fundamentals of game design and development. Throughout this course students will learn a variety of concepts related to art, mechanics, and game development using the JavaScript programming language.

Following this course students will possess an understanding how to apply their newly acquired skills to create a variety of browser based games.

Course Objectives

Upon completion of this course, student will be able to

- Utilize online art software to create their own game assets
- Apply game design principles to create engaging experiences for players.
- Use JavaScript to create original game mechanics.
- Use algebra and vector arithmetic to describe motion and simulate natural phenomena.
- Apply newtonian mechanics and geometry to game elements to simulate projectiles and detect collisions.

Mission and Goals

In accordance with the Mission of Mastery Coding, the faculty, staff, and students understand and declare our purpose to be the encouragement of life-long learning, academic excellence, the education of the whole person, and future readiness in a world changed by technology.

Value and respect for all individuals

We believe in the worth of each individual. We affirm the inherent dignity and value of each person. Therefore, we believe that all individuals have the potential to be successful learners with unique characteristics and experiences that bring positive value and meaning to the learning experience.

All students will be:

- Offered a challenging learning experience that will help to maximize their individual achievement and provide meaningful opportunities for students to excel
- Offered diverse instructional suggestions and strategies that address the specific needs of the United State's diverse population
- Provided a clear instructional goal
- Afforded an instructional program that preserves the balance of conceptual understanding and problem solving of the subject area.
- Provided the learning in each instructional year that lays the necessary groundwork for success in subsequent years of study
- Provided a learning environment that fosters a genuine understanding and confidence in all students that through hard work and sustained effort, they can achieve or exceed the learning objectives
- Provided a cogent balance theory, research, and practice.

Develop moral, intellectual, responsible, and caring citizens

We are committed to the preparation of students who will be exemplars in the field, and who reflect high standards of ethics and values. We seek to be, and to encourage others to be, people who have the intellectual skills to critically evaluate important issues, have the moral conviction to respond as agents of change, and exhibit an ethic of care in the service of others.

Grading Scale

93.0%-100%	A
90.5%-92.9%	A-
88.0%-90.4%	B+
85.0%-87.9%	B
80.0%-84.9%	B-
78.0%-79.4%	C+
71.0%-77.9%	C
69.5%-70.9%	C-
68.0%-69.4%	D+
61.0%-67.9%	D
59.5%-60.9%	D-
0 - 59.4%	F

**The instructor retains the right to make changes, additions or deletions to the syllabus during the course of the learning period.*

Course Breakdown

Unit 1: JavaScript and Game Development

Students create video game assets using pixel art software. Then they learn the fundamentals of JavaScript and how to utilize object-oriented programming to build a text adventure game.

Learning Objectives

By the end of this unit, students will be able to:

- Identify themes and art styles in games
- Create art assets using online software
- Use flowcharts to model a game narrative with branching paths
- Apply JavaScript principles to code game logic

Chapters

- Chapter 1: Video Game Art (Duration: 2 hours 45 minutes)
  - Game art exploration
  - Creating art assets
- Chapter 2: Coding Fundamentals (Duration: 4 hours 30 minutes)
  - Fundamental data types
  - Variables, strings, and arithmetic operations
  - File management
- Chapter 3: Functions and Objects (Duration: 4 hours 15 minutes)
  - Functions and objects
  - Object-Oriented Programming (OOP)
- Chapter 4: Comprehensive Storytelling (Duration: 4 hours)
  - Game narrative
  - Text adventure project

Unit 2: Game Mechanics and Control Structures

Students utilize game mechanics to build player-oriented gameplay and leverage new data types, logical operators, conditionals, loops, and other coding concepts to build a word-guessing game.

Learning Objectives

By the end of this unit, students will be able to:

- Use logical operators and conditional statements to describe complex logic.
- Simulate randomness using JavaScript functions.
- .Use arrays to store and manipulate collections of data.

Chapters

- Chapter 1: Game Mechanics (Duration: 4 hours 15 minutes)
  - Game mechanics exploration
  - Design a board game
  - Balancing and feedback collection
- Chapter 2: Operators and Conditionals (Duration: 3 hours 30 minutes)
  - Comparison operators
  - Conditional statements
- Chapter 3: Randomness (Duration: 3 hours)
  - JavaScript random library methods
  - Applications of randomness
- Chapter 4: Arrays (Duration: 2 hours)
  - Array declaration, definition, and reassignment
  - Array methods
- Chapter 5: Word Guessing Game (Duration: 2 hours 15 minutes)
  - Students create a word guessing game on a category of their choice.