

**Course Outline**

**COURSE:** CSIS 160                      **DIVISION:** 50                      **ALSO LISTED AS:** DM 160

**TERM EFFECTIVE:** Fall 2016                      **CURRICULUM APPROVAL DATE:** 02/22/2016

**SHORT TITLE:** GAME DESIGN

**LONG TITLE:** Game Design

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
3	18	Lecture:	3	54
		Lab:	0	0
		Other:	0	0
		Total:	3	54

**COURSE DESCRIPTION:**

Intended for students who want to explore game design and computational media. Compelling successful games are created by developers who have absorbed the fundamental principles of good game design. Students will analyze existing games for their educational and entertainment value, and create their own games using freely available software and game development environments. Key concepts such as game math, textures and materials, geometry and topology, lighting, sound and special effects will be explored. No previous programming experience is necessary. This course has the option of a letter grade or pass/no pass. This course is also listed as DM 160.

**PREREQUISITES:**

**COREQUISITES:**

**CREDIT STATUS:** D - Credit - Degree Applicable

**GRADING MODES**

- L - Standard Letter Grade
- P - Pass/No Pass

**REPEATABILITY:** N - Course may not be repeated

**SCHEDULE TYPES:**

- 02 - Lecture and/or discussion
- 05 - Hybrid
- 72 - Dist. Ed Internet Delayed

## **STUDENT LEARNING OUTCOMES:**

1. Students will discuss the fundamentals of good game design and explain what elements or features contribute to making a game compelling and popular.

Measure: quiz, homework, exam

PLO:

ILO: 7,1,2, 3, 4, 5

GE-LO: C1, C5

Anticipated Year of Assessment: 2017

2. Students will identify sprites, objects and components needed to implement a given game concept.

Measure: homework, project, exam

PLO:

ILO: 7,1,2

GE-LO: B8

Anticipated Year of Assessment: 2017

3. Students will design and implement at least two additional game levels that extend the concepts presented in class.

Measure: project

PLO: 7, 2

ILO:

GE-LO:

Anticipated Year of Assessment: 2017

4. Students will identify the logic errors in the coding of games and make appropriate corrections to make the games function as specified.

Measure: project, homework, exam

PLO:

ILO: 7, 1, 2, 3

GE-LO: B8

Anticipated Year of Assessment: 2017

## **CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS**

Curriculum Approval Date: 02/22/2016

3 Hours

Content: GETTING STARTED

Installing the Software

The Global User Interface

Running a Game

How to Get More Information

Student Performance Objectives (SPO): Students can use the software interface and the help features

Out-of-Class Assignments: Read chapter in text. Download and install software.

3 Hours

Content: Your First Game

Sprites

Objects

The Boss Object

Events and Actions

Rooms

Save and Run

Instances and Objects

## Backgrounds and Sounds

- A Background Image

- Background Music

- Sound Effects

Student Performance Objectives (SPO): Students can use the basic features of the software.

Out-of-Class Assignments: Read chapter in text. Start creating a simple game.

3 Hours

Content: Part 2 ACTION GAMES

- More Actions

- Sprites and Sounds

- Winning and Losing

- Scores

- Levels

- A Title Screen

- Winning the Game

- Adding Some Visual Variety

- Help Information

Student Performance Objectives (SPO): Students can use more features of the software.

Out-of-Class Assignments: Read chapter in text. Add simple visual enhancements to game.

3 Hours

Content: Target the Player

- Designing the Game

- An Animated Character

- A Test Environment

- Falling Boxes

- Adding a Goal

- Starting a Level

- Sounds, Backgrounds and Help Levels

Student Performance Objectives (SPO):

Out-of-Class Assignments:

3 Hours

Content: Game Design: Interactive Challenges

- What Makes a Good Game?

- Game Design

Graphics, Pixels, and Color

- Game Mechanics

- Interactive Challenges

- Game Genres

- Challenges

- Difficulty

- Goals

- Rewards

- Sub-goals

- Interactivity

- Choices and Control

Audio Feedback

Student Performance Objectives (SPO): Students can describe three features of a good game.

Out-of-Class Assignments: Read chapters in the text.

3 Hours

Content: LEVEL DESIGN

Inheriting Events

- Designing the Game: Game Software Development
- A Game Framework
- The Front-End
- The Completion Screen
- Lives
- Blocks
- Polishing the Game
- Sound Effects
- Sound and Music
- Saving Games and Quitting
- Creating the Levels

Student Performance Objectives (SPO): Students create an plan for a more detailed game.

Out-of-Class Assignments: Read chapters in text. Create a written plan for a game with levels.

3 Hours

Content: Maze Games

- Designing the Game
- The Basic Maze
- The Game Framework
- A Moving Character
- Creating Hazards
- Tiles
- Locks and Switches
- Finishing the Game

Student Performance Objectives (SPO): Students can describe how a maze is designed

Out-of-Class Assignments: Read chapter in text. Design a simple maze.

3 Hours

Content: Game Design: Levels and Features

- Selecting Features
- Designing Levels
- Learning Curves
- Difficulty Curves
- Applying it All
- Features
- Summary

Student Performance Objectives (SPO): Students can describe the concept of levels in a game.

Out-of-Class Assignments: Read the text. Continue to refine the plan for a game with several levels.

3 Hours

Content: MULTIPLAYER GAMES

Cooperative Games

- Variables and Properties
- The Illusion of Motion
- Flying Planes
- Enemies and Weapons
- Dealing with Damage
- Time Lines

## Finishing Touches

Student Performance Objectives (SPO): Students discuss the differences in designing single versus multiplayer games

Out-of-Class Assignments: Read the text. Continue to work on game projects.

3 Hours

Content: Competitive Games

Views

Student Performance Objectives (SPO):

Out-of-Class Assignments:

6 Hours

Content: Game Design: Balance in Multiplayer Games

Competition and Cooperation

Independent Competition

Dependent Competition

Independent Cooperation

Dependent Cooperation

Mix and Match

Balanced Beginnings

Equivalent Characters

Balancing Differences

Balanced Choice

Weighted Choice

Cyclic Relationships

Balanced Computer Opponents

Artificial Stupidity

Summary

Student Performance Objectives (SPO): Students can describe three features of a good multiplayer game.

Out-of-Class Assignments: Read the text. Collaborate with classmates on multiplayer game project.

6 Hours

Content: ENEMIES AND INTELLIGENCE

Become a Programmer

Variables

Functions

Conditional Statements

Repeating Things

Arrays

Dealing with Other Instances

Scripts as Functions

Debugging Programs

Student Performance Objectives (SPO): Students can describe the relationship between various code statements and specific actions of characters in a game.

Out-of-Class Assignments: Read the text. Create and debug a new movement or action for a character in a game.

3 Hours

Content: Clever Computers

Designing the Game

The Playing Field

Let the Computer Play

## A Clever Computer Opponent

### Adaptive Gameplay

Student Performance Objectives (SPO): Students can describe the programming concepts that allow the computer to play the role of the opponent in a game.

Out-of-Class Assignments: Read the text. Program the tic-tac-toe game with the computer as the opponent.

3 Hours

Content: Intelligent Behavior

Designing the Game

Lighting and Rendering

The Basic Framework

Creating the Maze and the Explorer

Reactive Behavior

Movable Blocks

Rule-Base Behavior

Walking Around

Dealing with States

Special Effects and Post-Processing

Student Performance Objectives (SPO): Students can create more advanced features in a game.

Out-of-Class Assignments: Read the text. Continue to collaborate on game projects.

3 Hours

Content: Final Words

Creating Resources

Artwork: the GIMP

Music: Anvil Studio

Sound Effects: Audacity

The Game Maker Community

Student Performance Objectives (SPO): Students can describe some resources to continue to enhance their games.

Out-of-Class Assignments: Read the text. Download and install an open source game resource and demonstrate it to classmates.

### **METHODS OF INSTRUCTION:**

Lecture, discussion, projects.

### **METHODS OF EVALUATION:**

Category 1 - The types of writing assignments required:

Percent range of total grade: % to %

If this is a degree applicable course, but substantial writing assignments are NOT appropriate, indicate reason

Course primarily involves skill demonstration or problem solving

Category 2 - The problem-solving assignments required:

Percent range of total grade: 10 % to 80 %

Homework Problems

Lab Reports

Other: game building projects

Category 3 - The types of skill demonstrations required:

Percent range of total grade: 10 % to 30 %

Class Performance/s

Category 4 - The types of objective examinations used in the course:

Percent range of total grade: 10 % to 30 %

Multiple Choice  
True/False  
Matching Items  
Completion  
Other: short answer

**REPRESENTATIVE TEXTBOOKS:**

Required:

Alan Thorn. Game Development Principles, Cengage Higher Ed, 2014. Or other appropriate college level text.

Reading level of text, Grade: 12+      Verified by: ev

Other textbooks or materials to be purchased by the student:

The Game Maker's Apprentice: Game Development for Beginners

Jacob Habgood and Mark Overmars Copyright 2006 Publisher: Apress

**ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 201670

UC TRANSFER:

Not Transferable

**SUPPLEMENTAL DATA:**

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: C

Maximum Hours: 3

Minimum Hours: 3

Course Control Number: CCC000571984

Sports/Physical Education Course: N

Taxonomy of Program: 070710