DIG-551: 2D GAME DEVELOPMENT

Effective Term
Fall 2024

BOT Approval Date
11/09/2023

Discipline
DIG - Digital Media

Course Number
551

Course Title
2D Game Development

Short Title
2D Game Development

Credit Status (CB 04)
D - Credit - Degree applicable

Units

Activity Units
3.00

Total Units
3

Hours

Activity Contact Hours
96-108

Out of Class Hours Activity
48-54

Total Contact Hours
96 - 108

Total Out of Class Hours
48 - 54

Total Student Learning Hours
144 - 162

Distance Education
No

Catalog Description
This course is a foundational exploration of 2D Game Development, including the historical and design principles that underlie the modern game industry. Students will design and develop 2D digital games through the use of basic game development concepts and creation techniques, including logic structures and game interaction.

Requisites

Pre or corequisite(s)

Prerequisite or corequisite(s) (must be taken simultaneously if not taken before)
DIG-110 (with a grade of C or better).

Codes

TOP Code (CB 03)
0614.20* - *Electronic Game Design

CIP Code
50.0411 - Game and Interactive Media Design.

Student Accountability Model (SAM) Priority Code (CB 09)
D - Possibly Occupational

Noncredit Category (CB 22)
Y - Credit Course

Repeatability Code
No

Grading Option
Letter grade OR P/NP

Minimum Qualifications

Minimum Qualifications	And/Or
Multimedia	End

CSU Area(s)

IGETC Area(s)

Learning Objectives

Learning Objectives

Learning Objective
1. Review and understand the artistic developments and technical advancements of video games throughout time.
2. Analyze and apply principles of game design, with a focus on creating fun and compelling gameplay that is inclusive and accessible to a diverse range of players.
3. Examine and differentiate the business aspects of game development from concept to commercialization.
4. Evaluate modern game engines and their role in the game development process.
5. Define the impact of digital prototyping on game development testing.
6. Integrate digital assets into digital game prototypes.

Learning Outcome Information

Course Learning Outcomes

Learning Outcome
1. Students will transform creative ideas into tangible forms.
2. Students will generate new meaning using different media.
3. Students will adapt and apply a technical skill in a new and novel situation.

Program Learning Outcomes

Learning Outcome
Analyze the implications of technology changes on the digital media industry.
Apply appropriate design decisions and techniques in new, industry-relevant contexts.
Interpret and produce digital media content in a culturally responsive manner.
Integrate theory with technical skills in digital media projects.
Devise innovative solutions to workflow-related problems.

Institutional Learning Outcomes

Aesthetic Awareness: The student will identify and evaluate how aesthetic expression leads to an appreciation of social and cultural context as well as the values of art and nature.
Communication: The student will effectively express and exchange ideas through listening, speaking, reading, writing, visual works, and other modes of interpersonal expression.
Critical Thinking: The student will analyze problems, gather and synthesize relevant information, evaluate ideas, information, and evaluate alternative points of view to create, innovate and implement effective solutions.
Cultural Awareness and Humility: The student will demonstrate knowledge of and sensitivity toward individuals of diverse ethnicity, age, gender, sexual orientation, and religious affiliations, as well as toward those individuals with diverse abilities and socio-economic classes to respectfully interact with individuals of diverse perspectives, beliefs and values while being mindful of the limitation of their own cultural frameworks.
Information and Technology Literacy: The student will access, interpret, evaluate, and apply relevant information sources and digital media effectively, and in an ethical and legal manner.
Social Awareness: The student will recognize and analyze the interconnectedness of global, national, and local concerns, analyzing cultural, political, social, and environmental issues from multiple perspectives and appreciate similarities and differences among cultures.
Civic
Personal
and Professional Responsibility

Content

Course Activity Content

1. History of Games
    a. Evolution of Games
        i. Traditional
        ii. Cultural Markets & Market Influence
    b. Digital Games
        i. Birth of Electronic Gaming
        ii. Rise of Arcade Games
        iii. Golden Age of Arcade Games
    c. Industry Matures
        i. Atari, the Crash, and Recovery
        ii. Nintendo
        iii. Console Wars
    d. Platforms and Business Models
        i. New Platforms
        ii. Non-Commercial Game Models
    e. Modern Gaming
    f. Industry Issues
        i. Developer Misconduct
        ii. The Whiteness of Main Characters
        iii. Cultural Demonizing through Enemy Characters
        iv. Social Critique of Games as a Positive/Negative Influence
2. The Business of Games

a. Career Paths
    i. Programmer
    ii. Artist
    iii. Level Designer
    iv. Producer
    v. Tester
    vi. Audio Engineers
    vii. Game Designers
b. Platform Development
    i. Console
    ii. Mobile
    iii. PC
    iv. Other

3. Game Design
    a. Game Designers Roles
    b. Game Genres
        i. Action Games
        ii. Adventure Games
        iii. Strategy Games
        iv. Role-Playing Games
        v. Sports games
        vi. Puzzles
        vii. Other Games
    c. Player Centric Design
        i. Game Concepts / Game Pitch
        ii. Teamwork
    d. Physical Prototype
4. Game Engine Technology
    a. Engine Basics
    b. User Interface
    c. Build Process
    d. Scene Management
    e. Primitive Placeholders
        i. Materials / Textures
        ii. Game Space
    f. Prototyping
        i. Input Controller
        ii. Win / Lose Condition
        iii. Scoring System
        iv. Variables
    g. Game Engine Physics
5. 2D Game Prototype
    a. Shooting Scroller
        i. Movement / Camera Controls
        ii. Inputs
        iii. Inventory
        iv. Enemies / Pathfinding
        v. Health / Loss Condition

vi. Levels / Scene Management
vii. Power-Ups

6. Level Construction
   a. Level Building Tools
      i. Colliders
      ii. Materials / Textures
      iii. Animation
      iv. Particle Systems
      v. Game Build / Testing

Methods of Instruction

Method
Activity

Integration
Activities such as digital movie tutorials and in-class exercises introduce the software interface and the working order of activities in the 2D Game Design process.

Method
Discussion

Integration
A discussion on how the main characters and enemy characters are portrayed based on game artwork from a handful major 2D games released this year with a focus on race and cultural biases.

Method
Role Playing/Simulation

Integration
Acting out the movement physically or simulating the action with real objects in the classroom reveals the necessary rigging schemes for a given action.

Methods of Evaluation

Method
Exams/Tests

Integration
Exam essay evaluating historical animation innovations and its impact on animation development. The innovations may include various film effects, visual effects approaches, and green screens.

Method
Portfolios

Integration
Portfolio generation exhibiting artifacts communicating animation skills, cultural awareness/sensitivity, and industry knowledge. The portfolio will be evaluated for the number of artifacts, artifact quality, contribution to character/in-game diversity, and visual communication.

Method
Role-playing/Simulation

Integration
An in-class production will simulate a pre-production client meeting. The simulation will be evaluated by quality and communication of pre-production documents, client outcomes, and storyboards illustrating camera and element movements.

Assignments

Assignment Type
Other

In-class and/or outside of class
Outside of class

Formative or Summative
Summative

Assignment
Assignment Example - 2D Platformer

Create a 2d platforming game using 2d sprites.

CRITERIA (2D platformer will include the following elements)
Creation of animated sprite asset for the player character
Creation of detailed background tiles and props for level creation.
Create sprite assets for enemies, weapons, hazards, and effects
Create sprites and custom game logic for enemies and boss enemies.
Create functioning User Interface to provide feedback to player

GOALS (Students will be able to)
Comfortably use 2d application to make assets for their game and menu interface
Create fundamental prefab game objects to work in the game world
Manipulate game scripts to adjust the difficulty of game and enemy behavior
Create a complete game loop in which players can win/lose and restart
Create complex 2d level designs with distinct challenges

Submit a Unity package file to the CMS for grading.

Assignment Type
Reading

In-class and/or outside of class
Outside of class

Formative or Summative
Formative

Assignment
Assignment: Article Review

For this assignment, you will be tasked with reading the provided article that discusses how AI is currenting impacting the game design industry (for better or worse). You will need to read this article for homework and come to class with at least 3 observations for discussion next week. It's okay to disagree with points made in the article!

Read article: ThinkML Team (2022). How AI is Used in Game Development. ThinkML.ai

Assignment Type
Writing

In-class and/or outside of class
In-class

Formative or Summative
Formative

Assignment
Assignment: Can Games Can Be Used for Social Good?

For this assignment, you will engage with the website for the non-profit company, Games for Change and write specifically about the state of diversity and cultural representation in the game industry today. Your explanation needs to be 200 words and must touch on the topics below:

1. Identifying traits in main characters (or lack thereof)
2. What these traits say about current biases in the industry leading developers
3. Examples of diverse or inclusive main characters from a AAA game released in the last year

The goal of this writing assignment is to have you become aware of the lack of cultural and identity inclusion in the game industry. As you as learning to become part of this workforce, you have the opportunity to change the negative culture that shrouds the industry.

Submit a PDF of your write-up to the CMS for grading.

Course Materials

Textbooks
Gibson, Jeremy (2022). Introduction to Game Design, Prototyping and Development: From Concept to Playable Game with Unity and C# (3rd Edition). Addison-Wesley Professional. ISBN-13: 978-0136619949

Class Size Information

Class Size
32

Class Size Category
G - Large lab 32

Diversity and Inclusion

Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.
As a technical/skill-based course, students will be encouraged to consistently apply the technical knowledge in projects/animations that reflect/communicate their views, beliefs, and concerns about society, race, gender, and self.

To help encourage views other than their own, students will study artifacts of Game Designs from history and from multiple cultural markets to fully understand how the cultural and historical conditions have shaped these games successfully (1.ii in the COR). What cultural conditions shape those designs and how they have evolved and shaped other cultural markets. Students will also be exposed to character bias and race, focusing on the current need for more diverse characters in the game market (f.i and f.ii in the COR).

Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.
Course instruction and assignments will emphasize the importance of representing diverse experiences and perspectives in game narratives, characters, and mechanics. Instruction will create a welcoming and inclusive classroom environment by promoting

respectful communication and addressing any biases or discriminatory behavior. Additionally, assignments and lectures will help expose students to a range of game genres and styles from diverse creators to broaden their understanding of the potential impact and significance of diverse representation in games.

Interactions

Explain how the course will incorporate student-to-student interaction.

Student assignments will be influenced by cultural styles and techniques throughout the world incorporating them into their own artifacts showcasing various cultural backgrounds and the source of inspiration upon completion of the artifact. Students will engage in reflective critique and peer conversations of the presented content of their own created artifacts throughout the course and discuss with their peers the experiences and cultural backgrounds used to inspire the creation.

Explain how the course will incorporate instructor-to-student interaction.

Using the course discussion forums and/or in-class discussions, the instructor will present artifacts of the creative discipline and industry-created artifacts from other markets and cultural backgrounds. Students will deconstruct these artifacts and discuss the merits of the presentation and how the source artifact's cultural background contributes to the work in a unique way.

Explain how the course will incorporate student-to-content interaction.

Students will learn about various markets and how products evolve throughout time and from different cultural markets and what historical-cultural influences lead to those differences. Students will learn design principles and differences from these historical-cultural artifacts and how they succeeded (or failed) in these markets to better understand how to tailor their content for a higher degree of success in these markets.

Explain how the course will incorporate student-to-self interaction (metacognitive).

Students will be expected to build on the concepts from previous discussions and class examples to allow them to blend a wide variety of cultural influences into their work throughout the course. Students will study cultural content for their work and translate it into their work for effective communication and reflection of the researched culture by an end-user of the student's artifact design.

Key: 3002