



# Advanced Simulation and Game Design

## 2023-2024 Catalog

[ARCHIVED CATALOG]

## SDEV 248 - Advanced Simulation and Game Design

**PREREQUISITES:** [SDEV 148 - Introduction to Game Development](#) and ([SDEV 140 - Introduction to Software Development](#) or [CSCI 101 - Computer Science I](#))

PROGRAM: Software Development

**CREDIT HOURS MIN:** 3

LECTURE HOURS MIN: 2

LAB HOURS MIN: 2

DATE OF LAST REVISION: Fall, 2020

This course continues the principles of computer game development utilizing advanced game development practices. Topics will include Colliders, Ray Casts, Audio Engine, specific platform development, AI, and development workflows. Students will practice with the different game engine technologies, Source Control software, and various approaches for developing different game genres.

**MAJOR COURSE LEARNING OBJECTIVES:** Upon successful completion of this course the student will be expected to:

1. Demonstrate how to design, code, edit, compile, test, and debug advanced level programs.
2. Implement a sprite sheet and skeleton animation systems.
3. Utilize colliders, triggers, and asset tags to drive game events.
4. Dramatize audio sources utilizing audio engines to provide player feedback.
5. Demonstrate the saving and loading of player data to track and maintain game progress.
6. Discuss the mathematics and physics principles used in game development.
7. Implement a physics system with rigid bodies with a mass that can be affected by an outside force.
8. Differentiate between different collider material properties like friction and bounce.
9. Develop an advanced game project in a team-based setting using software development methodologies.
10. Discuss proper customer service techniques when user testing and collecting player feedback.
11. Demonstrate a fundamental understanding of AI scripting and interactions with player objects.
12. Evaluate options for compiling and sharing project files inside of the game engine.
13. Discuss issues and resources available for cross-platform development

**COURSE CONTENT:** Topical areas of study include -

- Classes/Inheritance
- Rigid Bodies
- Artificial intelligence
- Velocity/Mass
- Gaming Engines
- Collider Materials
- Collision detection
- Player Prefs (save data)
- Ray casting
- Agile/Scrum
- Object tags
- Scripting AI

- GitHub
- Source Control
- Compiling project



[Course Addendum - Syllabus \(Click to expand\)](#)

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