CS 4455/CS 6457 Video Game Design and Programming Syllabus

Jeff Wilson, PhD

Fall 2026

CS 4455/CS 6457 Video Game Design and Programming

Semester and Academic Year: Fall 2026

Credits: 3 Credit Hours

Instructor Information

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General Course Information

Course Description

Techniques for electronic game design and programming, including graphics, game engines, animation, behavioral control for autonomous characters, interaction, social and interface issues of multi-user play.

Course Learning Outcomes

By the end of the course, students should be able to:

- Apply core game design concepts to the creation and evaluation of digital games.
- Implement three-dimensional game interactions using a contemporary game engine.
- Develop real-time game systems that combine player control, physics, animation, user interface, and artificial intelligence.
- Participate in iterative playtesting and revision of a game project.

Required Course Materials

- No textbook is required; readings and assignment materials are provided through Canvas.
- Students need access to a Windows or macOS computer capable of running Unity and the required course development tools. Programming is primarily performed in Unity with C#.
- Recommended: Game Design Workshop, Fourth Edition, Tracy Fullerton, ISBN-13 978-0240809748.
- Recommended: Game Feel: A Game Designer's Guide to Virtual Sensation, Steve Swink, ISBN-13 978-0123743282.

Grading Policy

- Module quizzes: 10% total
  - Short quiz per learning module: Various, contributing to 10% overall
- Individual milestones: 45% total
  - Warmup: 1%

  - Character Control - Animation-Based: 11%
  - Environment Interaction (Physics): 11%
  - UI and Prefabs (menus, HUD, etc.): 11%
  - AI: 11%
- Team project: 45% total
  - Pitch and Interaction Demo: 4%
  - Alpha Demo: 8%
  - Playtesting and Analysis: 8%
  - Final Game (presentation, video, code submission, etc.): 25%

Assignment details, due dates, and final grading logistics are maintained in Canvas.

Late Policy

A 24-hour grace period is allowed for late submission with no penalty. Submissions are not accepted beyond the grace period unless institutionally approved.

Additional Criteria for Successful Completion

- Complete individual assignments as individual work.
- Participate substantially in team project work when assigned to a team.
- Submit required project materials, including code, documentation, presentations, and analysis artifacts.

Attendance and Participation

For on-campus sections, lecture attendance is recommended but not required. Asynchronous lecture materials are available. Some assignments have in-person/synchronous deliverables such as team presentations. For OMSCS offerings, attendance is generally asynchronous except for any scheduled presentations or activities that require real-time participation.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the Georgia Tech Academic Honor Code. Suspected academic misconduct will be referred to the Office of Student Integrity. Individual assignments must be authored individually; team project submissions must reflect the approved work of the submitting team. AI-based assistance is treated like collaboration with another person. Assignment instructions may restrict AI use, and copied or uncited AI output is treated as plagiarism.

Student Conduct

Students and faculty are expected to maintain an atmosphere of mutual respect, acknowledgement, and responsibility consistent with Georgia Tech's Student-Faculty Expectations Agreement.

Accommodations for Students with Disabilities

Students with learning needs that require accommodation should contact the Office of Disability Services as soon as possible to discuss their needs and obtain an accommodations letter. Students should also contact the instructor so approved accommodations can be implemented.

Core IMPACTS

Not applicable.