

# CSCI 321: Introduction to Computer Game Development

## Syllabus, Fall, 2017

**Instructor:** Geoffrey Matthews, x3797, geoffrey dot matthews at wwu dot edu

**Office hours:** MTWF 11:00-10:50, CF 469

**Lectures:** MTWF 9:00-9:50am, AH 018

**Webpages:**

- <https://www.instructure.com> Grades, turn in homework.
- <https://github.com/geofmatthews/csci321> Handouts.

**Content:** This class is an introduction to the design, programming, ethics, and business of computer games. Topics include:

- Game design
- Game architecture
- Graphics
- Physics and simulations
- Game AI (artificial intelligence)
- Game Story
- Game Mechanics
- Social aspects of games

**Course objectives:** At the end of this class the student should be able to:

- Understand basic game architecture:
  - Game loop
  - Game timing
  - Event oriented programming
- Understand basic nonplayer character AI:
  - State oriented behavior
  - Autonomous motion
  - A\* search
  - Goal driven behavior
- Understand the basics of 2D and 3D physics necessary for games:
  - Understand tradeoffs in numerical integration techniques
  - Collision detection, resolution, and response
- Understand blitting and 2D graphics, transparency, animated sprites
- Understand the basics of 3D computer graphics
- Understand the basics of 3D animation, character modeling, rigging and skinning
- Use Python and Pygame to produce a 2D game
- Use Blender gamekit to produce a 3D game, including 3D content
- Understand the elements of storytelling and drama: character, conflict, and plot.
- Use Inform 7 to produce an interactive fiction game
- Understand the basics of the game industry today, job titles, responsibilities, *etc.*
- Understand the social issues of games, such as game violence, addiction, griefing, and hacking.

**Exams:** One midterm and one final. Closed book, but two double-sided sheets of paper may be used during the exams.

**Reading:** All students are expected to do the reading assigned throughout the quarter in order to be prepared for the weekly quizzes and the exams.

**Games:** There will be three game programming assignments: a 2D game in python and pygame, a 3D game in Blender3D, and an IF (interactive fiction) game in Inform 7.

**Game Journal:** All students are required to play at least 2 hours of games every week. You must keep a journal on games, hours, etc. More detailed instructions will be handed out in class. Game journals are due every week except the last week (dead week) by midnight on Sunday

**Late work:** Submissions are due before midnight of the due date. Work turned in up to 48 hours late will be accepted with no penalty. This 48 hour extension is provided for emergencies. Do not abuse it: there will be no further extensions.

**Pop quizzes:** Pop quizzes will be given out in class at unannounced times. After attempting to solve the quiz on your own or in small groups, we will solve it together in class before turning it in at the end of class.

**Absences:** If you have a well documented emergency (illness, military service, school sponsored athletic events, *etc.*) notify your instructor as soon as possible and present documentation (a note from your mother is not sufficient) in advance. The instructor may, at his discretion, extend the due date for the assignment, schedule a make-up exam, or simply adjust your remaining scores to determine your grade.

**Grading:** Grades will be based on pop quizzes, the three games you produce, your game journal, a midterm, and a final exam. There are no extra credit opportunities for this class. Relative weighting of the various assessments and assignment of plus and minus is at the discretion of the instructor.

$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$

|                 |     |
|-----------------|-----|
| Game journal    | 5%  |
| Pop Quizzes     | 5%  |
| Midterm         | 15% |
| Final           | 25% |
| 2D Pygame game  | 20% |
| 3D Blender game | 20% |
| Inform7 game    | 10% |

**Texts and Readings:** *Programming Game AI by Example* (in bookstore). Other readings from online materials will be assigned as they come up.

#### Schedule:

|      | Su | Mo | Tu | We | Th | Fr | Sa | Topic           | Deadlines             |
|------|----|----|----|----|----|----|----|-----------------|-----------------------|
| Sept | 24 | 25 | 26 | 27 | 28 | 29 | 30 | Pygame          |                       |
| Oct  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | Pygame          |                       |
|      | 8  | 9  | 10 | 11 | 12 | 13 | 14 | Pygame, Physics |                       |
|      | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Physics         |                       |
|      | 22 | 23 | 24 | 25 | 26 | 27 | 28 | Blender3D       |                       |
| Nov  | 29 | 30 | 31 | 1  | 2  | 3  | 4  | Physics         | 2D game due Wednesday |
|      | 5  | 6  | 7  | 8  | 9  | 10 | 11 | AI              | Midterm Wednesday     |
|      | 12 | 13 | 14 | 15 | 16 | 17 | 18 | Inform7, Story  |                       |
|      | 19 | 20 | 21 | 22 | 23 | 24 | 25 | AI              | 3D game due Wednesday |
| Dec  | 26 | 27 | 28 | 29 | 30 | 1  | 2  | AI              |                       |
|      | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Social issues   | IF game due Wednesday |
|      | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Final Exam      | Monday 8:00am         |

**Academic dishonesty:** Academic dishonesty policy and procedure is discussed in the University Catalog, Appendix D. All students should read this section of the catalog. Academic dishonesty consists of misrepresentation by deception or other fraudulent means. In computer science courses this frequently takes the form of copying another's program, either a fellow student's program, or copying one from the web. Due diligence should be exercised in the labs at all times, since both copying and letting someone else copy your program are equally culpable. Do not walk away from your computer in the lab without logging out or locking the screen. Do not print out code and then throw it away in the lab trash cans. Do not share files, even if it is just to "show them something." Describe it in words, or talk to them in person, never share code.

**Collaboration:** Collaboration with your fellow students is a good way to learn. Feel free to share ideas, solve problems, and discuss your programs with other students. However, collaboration is *not* copying. All code should be original. Remember the **Long Term Memory Rule**: After discussing homework with another student, each of you must destroy all written notes, pictures, files that you shared, erase the board, *etc.*. After that, you must watch a rerun of *the Simpson's*, play a round of ping-pong, go for a walk, or do something else unrelated, for half an hour. Then you can take the knowledge you gained from another student and put it to work, since it is now not copying, but learning. You have made it your own.