**CS 4173 Video Game Development**
Last modified: 8/12/2021

**Instructor:** Dr. Douglas R. Heisterkamp  
email: doug@cs.okstate.edu  
phone: 918-200-9377  
office: 508 MSCS (Stillwater) and 321 NH (Tulsa)  
zoom id : douglas.r.heisterkamp@okstate.edu

**Office Hours:**  
Tuesday, 1:30-3:00 p.m. in Stillwater, MSCS 508  
Wednesday, 2:00-3:30, zoom meeting; invite on canvas  
Other times available by appointment.

**Technical Support:** OSU Arts & Sciences Outreach Office  
email: casoutreach@okstate.edu  
phone: 405-744-5647


**Prerequisites:** CS 2133, CS 2433, and MATH 2144 or equivalent courses.

**Course Catalog Description:** History of video games. A survey of various game platforms. Computer graphics, audio tools and techniques, and artificial intelligence for game development. Game engines. Game development tools and techniques. An overview of the video game industry from a development perspective.

**Grading:**  
- Game Reviews 10%  
- Programming Exercises 35%  
- Game Project 25%  
- Exam 1 15%  
- Exam 2 15%  
- Graduate project 10%  

**Grading Scale:** for score $x$ in

<table>
<thead>
<tr>
<th>$x$</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>$90% \leq x$</td>
<td>A</td>
</tr>
<tr>
<td>$80% \leq x &lt; 90%$</td>
<td>B</td>
</tr>
<tr>
<td>$70% \leq x &lt; 80%$</td>
<td>C</td>
</tr>
<tr>
<td>$60% \leq x &lt; 70%$</td>
<td>D</td>
</tr>
<tr>
<td>$x &lt; 60%$</td>
<td>F</td>
</tr>
</tbody>
</table>

**Graduate project — research paper and presentation:** graduate students have the addition work of a research paper due at the end of dead week. The paper must be related to an academic paper presented at the game developers conference (GDC) within the last three years. The research paper will be worth 10% before renormalizing back to a total of 100%.
Dates:

- Exam I: October 7
- Exam II: November 11
- Game Project: December 3

Examinations: Exams I and II will be programming based exams. You can use Unity documentation and the rest of the internet as a static resource. That is, you can use existing resources to help solve the questions, but you should not have dynamic content generated to help you solve a question (that is, don’t ask for answers). You should submit solutions as you finish each question. Answers submitted within three hours of starting the exam have no penalty. Answers submitted after three hours and before 24 hours will have a 10% penalty. Answers submitted after 24 hours and before 48 hours will have a 30% penalty. Answers submitted after 48 hours and before 96 hours will have a 50% penalty. After 96 hours, answers can not be submitted.

Game Reviews: everyone will select two different games for review. A review will consist of three components: a presentation, a written design document, and a discussion.

Assigned work: There will be individual assignments. Programs will be required to use the Unity framework. Solutions may be submitted via drop box on canvas or using git (information on git will be given in class). Multifile solutions submitted to drop box must be archived using zip or tar. All files needed to build and run the program must be submitted (typically, exported into a Unity package or built into an executable). Assignments will be due at 11:59 p.m. on Fridays. If assignments are turned in late, they lose a percentage of their graded point values according to the following schedule:

<table>
<thead>
<tr>
<th>Programming Exercises and Assignments</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>On time</td>
<td></td>
</tr>
<tr>
<td>One week</td>
<td>10%</td>
</tr>
<tr>
<td>Two weeks</td>
<td>20%</td>
</tr>
<tr>
<td>Three weeks</td>
<td>50%</td>
</tr>
<tr>
<td>More than three weeks</td>
<td>100%</td>
</tr>
</tbody>
</table>

CS user name and passwords: If you have not used the departmental server, csx.cs.okstate.edu, in your previous courses, see users names and passwords section of [https://computerscience.okstate.edu/loggingon](https://computerscience.okstate.edu/loggingon) to create your initial password. This user name and password will be used with the git server running on cs.okstate.edu.

Game Project: a semester long project in which you can explore advance techniques and gameplay. The final project is due on December 4. An initial design document and an intermediate design and prototype will be due during the semester.

Software/Hardware requirements:

- **Unity Hub** from [https://unity3d.com/get-unity/download](https://unity3d.com/get-unity/download) which installs and manages Unity. Unity runs on Windows, Macs, and linux. It is also installed in the MSCS 222, the Mac Lab.
- A **git** client for your operating system (available in the visual studio installer on Windows and in the XCode command line tools on Mac). You may also wish to add a git GUI client, but all course instructions will be for the command line.
- A Xbox compatible gamepad that will communicate with your machine (optional, but recommended).
- A headset, or speakers and a microphone (optional, but recommended).

**Collaboration:**
Discussion of concepts, ideas, and techniques is allowed. After discussion, each student (or team in group assignments) must write up his/her own solution. Copying another person’s work, in part or whole, is not allowed. Giving another student your work, in part or whole, is considered cheating as well. If you are unsure whether your collaboration is acceptable, speak with the instructor in advance. Any violation of academic integrity would result in a non-droppable grade of zero for that assignment and an additional reduction of one letter grade in the course and a report to the university administration. Major violations will result in a grade of F!

**Disabilities act:** If any student feels that they have a disability and needs special accommodations of any nature whatsoever, the instructor will work with you and the Office of Disabled Student Services to provide reasonable accommodations to ensure that you have a fair opportunity to perform in this class. Please advise the instructor of such disability and the desired accommodations at some point before, during, or immediately after the first scheduled class period.

**Syllabus Attachment:** See [https://academicaffairs.okstate.edu/site-files/documents/2021-fall-syllabus-attachment-7-21-21.pdf](https://academicaffairs.okstate.edu/site-files/documents/2021-fall-syllabus-attachment-7-21-21.pdf) for Stillwater’s syllabus attachment. A copy of Stillwater’s syllabus attachment will be uploaded to canvas.