George Mason University Korea
Computer Game Design Program

GAME 140: Applied Coding for Game Design

Term: Fall 2019
Section: K01
Instructor: Jared Bruhn
Office: G557

Meeting Time: Tuesday / Thursday 3:00 pm - 4:15pm
Room: G401
Email: jbruhn@gmu.edu
Office Hours: Monday / Wednesday 5:00 pm - 7:00pm

Course Description

This class covers basic programming concepts, data structures, and techniques specifically relevant to game design. The techniques covered in this class will provide a fundamental understanding of programming with regards to game design that is independent of any particular engine or toolset.

Course Overview

In this course, you will learn the fundamental techniques necessary to build basic text-based and 2D games using C/C++ without relying on a game engine. Through this process, you will learn how to organize game-relevant data and break-down game designs into logical, implementable chunks. This course serves as an introduction to programming techniques that can be applied across a variety of toolsets used in game development.

Course Objectives

Upon completion of this course, students will:

- Recognize and use basic programming features like loops, branching, and variables
- Use the Visual Studio debugger to debug errors in their programs
- Decompose game feature specifications into implementable rules
- Apply basic coding skills to implement simple text-based and 2D sprite-based games
- Use basic object-oriented programming techniques to add functionality to existing classes
- Use 2D vector arithmetic to implement game object behaviors.

Requirements and Evaluation

At the beginning of each class meeting, students should be prepared to discuss the assigned readings, topic assignments, and game examples. Class meetings will consist of lectures, discussion, film screening, game play, peer review, and hands on activities that often require collaboration with classmates.

The first half of the semester will involve engagement with our text and the topics contained therein as students begin to develop ideas for an original research paper. As the semester progresses, the original project will be revisited in various forms and formats. Throughout the semester, students will be ‘quizzed’ on written material in order to promote lasting, deep learning of the material for future coursework.

Required Software

If students want to work on assignments at home, they will need to have access to the following software in order to complete the required assignments:

- Windows 7+
- Visual Studio Community 2017

In addition, students will need access and ability to produce 2D game art on a suitable graphics program like Adobe Photoshop / Illustrator. The usage of this software will not be specifically covered in-class.

Recommended Materials:

PC Desktop / Laptop (For working on projects outside of class/lab)
USB Flash Drive and/or Online File Sharing Account

Assignments & Grade Breakdown

Upcoming assignments will be announced in class before becoming available on Blackboard. Students are expected to check Blackboard on a weekly basis to preview their upcoming assignments. Digital assignments must be turned in via Blackboard.

This is a tentative schedule of topics covered and assignments. This is subject to change at the professor's discretion. Make sure to attend class and pay attention to blackboard announcements for communication about changes:

Projects:

These are major programming projects that you will be completing during this course. Each Project corresponds to a Unit of this course and most take multiple weeks to complete. You will be expected to complete a Unit's Project before proceeding to the next Unit. You are expected to work on a Project during the entire course of its corresponding Unit. I strongly recommend that you do NOT wait until the end of a Unit to start working on its project.

Unlike graded lesson activities, projects have set deadlines. YOU MUST submit your project by the deadline. If you need an extension on the deadline, let me know and we can work something out.
I accept multiple submissions on projects, If you want to submit a nominally working project early and submit more complete version later, that is just fine. I will grade the latest submission.
If, for some reason, you completely miss a project deadline, talk to me and we'll see what we can work out depending on the situation. Remember: partial credit is always WAY BETTER than no credit at all.

Unit #	Topic	Grade Breakdown
Unit 1 (1 week)	**Self-Intro and Visual Studio Orientation** You will setup your development environment and introduce yourself with a very simple program.	5%
Unit 2 (2 weeks)	**Text Battle** You will implement a simple RPG-like turn-based battle using console (text) output.	10%
Unit 3 (2 weeks)	**Text Adventure** You will create a text-based adventure game where a player moves between rooms and interacts using text commands.	10%
Unit 4 (3 weeks)	**ASCII Dungeon** You will create a text-based dungeon made up of virtual rooms filled with interactive objects represented with ASCII symbols.	15%
Unit 5 (2 weeks)	**Intro to SDL** You will create a simple animation using sprites and the Simple DirectMedia Layer (SDL).	5%
Unit 6 (4 weeks)	**2D Dungeon Game** You will create a 2D sprite-based dungeon game where a player moves around and interacts with objects in real-time. You will complete this project in lieu of a final exam.	20%

Other Graded Work:

Topic	Grade Breakdown
Quizzes & Graded Lesson Activities Each Unit is made up of multiple lessons. A lesson will generally have some lecture material (like a video) as well as a short, graded activity (like a quiz) related to the lesson material. You are expected to complete all the graded lesson activities in this course. In general, I will accept multiple submissions for assignments and quizzes that are embedded in lessons. I will use the latest attempt for calculating your grade. So, if you were to take a quiz and miss a question, by all means, TAKE IT AGAIN to improve your grade! While graded lesson activities don't have specific deadlines, I recommend you do them as soon as you encounter them. It's possible to leave until the end of the course, but they tend to pile up quickly and you'd only be hurting yourself in the process.	20%
Project Demos (x6) At certain scheduled times in the course, we will have Project Demo meetings. There will be one meeting for each project. During these meetings, students will demo their projects for the meeting. You are required to attend and demo ALL 6 demo meetings.	15%

Grading Scale

Final grades will be assigned based on the percentage points earned in the overall course:

Grade:	Percentage Points:
A	94 – 100
A-	90 – 94
B+	87 – 89
B	84 – 86
B-	80 – 83
C+	77 – 79
C	74 – 76
C-	70 – 73
D	60 – 69
F	Below 60

Participation & Attendance

Students are expected to actively engage in class discussions, answer questions when prompted, and in general, add to the collective dialogue. Participation in class discussions and activities is necessary for the course.
Each class is a building block for the next. The lecture will cover additional necessary information and discussions that you will not want to miss, so come to class. In the event that you have to miss class, you still are responsible for the material covered that day, including project or homework assignments and changes in schedules.

Late Work and Make-up Policy

Meeting deadlines is one of the most important aspects of game design. Please pay careful attention to the due date and time for each assignment. Assignments must be in before the due date and time to receive credit for the assignment. If extenuating circumstances prevent a student from finishing an assignment before the due date and time, the student must contact the instructor before the assignment is due. Late work will only be accepted at the instructor's discretion. If it is accepted at all, grading may be adjusted based on the tardiness.

UNIVERSITY POLICIES

The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies.

ACADEMIC INTEGRITY

It is expected that students adhere to the George Mason University Honor Code as it relates to integrity regarding coursework and grades. The Honor Code reads as follows: “To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this Honor Code: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.” More information about the Honor Code, including definitions of cheating, lying, and plagiarism, can be found on the Committee of Academic Integrity’s website at https://masonkorea.gmu.edu/mkaa/cai.

TITLE IX

As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason Korea’s Deputy Title IX Coordinator pursuant to University Policy 1202 and 1412. If you would like to speak confidentially with the Mason Korea student counselor, please see https://masonkorea.gmu.edu/mksa/services/counseling/ for more information. For more information about what Title IX is, please see https://masonkorea.gmu.edu/mksa/services/tix/.

MASON EMAIL ACCOUNTS

Students must use their MasonLIVE email account to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information. All digital communication with the professor must be made using your “masonlive” email account.

CAMPUS RESOURCES:

RESOURCES: https://masonkorea.gmu.edu/resources/

DISABILITY RESOURCES

If you are a student with a disability and you need accommodations, please see me and contact the Office of Disability Resources at +1-703-993-2474. All Academic accommodations must be arranged through that office. Also, you can contact MKASA at 032- 626-5005.

GMUK ACADEMIC RESOURCE CENTER

The Academic Resource Center, GMUK is in the business of looking at your papers and problems to improve your academic achievement in the area of Writing, Mathematics, Accounting, Statistics, and Economics. You are invited to utilize the faculty and student tutor services at a variety of stages in your academic activities, checking to see that your project specifically meets the directions specified by your instructor. While tutors are ‘fixing’ your writing or projects, they do help you become conscious of particular error patterns that emerge in your work. For more information, please contact Professor Eunmee Lee, director of Academic Resource Center (elee45@gmu.edu, office #521)