Game Programming Concepts Syllabus

Spring 2014

Instructor Information

Instructor	Email
Justin Selgrad	jselgrad@cs.siu.edu
Office Location & Hours	FANR 3125; Monday, Wednesday 10 - 12:50, Friday 12:00 – 12:50 *(subject to change)*

TA	Email
Reza Khoie	rezakhoie@siu.edu
Office Location & Hours	TBD

General Information

Description

Game Programming Concepts introduces the students to major game programming and game design themes, theories and concepts. Students will be exposed to fundamental game programming and design concepts through 2D game development. The core of the course will center on the analysis of major game mechanics and other fundamental skills that are expressed in multiple games across several genres. There is a strong focus on analysis and discovery learning. Students taking this class will be expected to observe existing mechanics, analyze and attempt to reproduce them both in documentation and in code.

Expectations and Goals

Students will learn fundamentals of game programming concepts such as collision detection and response, rudimentary state-based A.I., state-based game loops, real-time interaction via player input, and responding to events, to name a few.

Course Materials

Required Materials

This course will be delivered with the following technologies. They are freely available, please download install them.

Options

• Python

- o www.python.org
- o Note: the version of python you should install is determined by the version of Pygame...
    - ▪ I would recommend Python 2.7

• PyGame

- o www.pygame.org

• Unity3D

- o www.unity3D.com
    - ▪ If we have time for it

Course Schedule (subject to change)

Module	Topic	Description
1	Hello Game Programming	Introduction to the programming environment and fundamentals such as the game lop
2	Basic movement and Bounds	Getting objects moving and bouncing around the screen
3	2D Collision Detection	Getting objects to bounce off eachother and interact
4	Controls	Integrate human interface to game
5	Object Orientation / Game Infrastructure Design	Applying object orientation to game programming, inheritance, useful design patters (factory)
6	Shooting	Enhancing our infrastructure to handle shooting
7	Animation and Sprites	Designing a 2D animated sprite class
8	Thinking in Gameplay	Introduction to the analysis of gameplay mechanics and game design
9	Jump Mechanics and Basic Physics	Simple gravity driven physics and the 5 Jumps and additional mechanics
10	Environmental Obstacles	Delving into the world of platformers, investigating common platforming mechanics such as moving platforms and jump-through tiles.
11	Power-Ups & Inventory	Working with common power-up ideas and implementations of inventory systems
12	Enemies and AI	Examining basic Game AI
13	Advanced Topics	Collision Detection optimizations, more AI, etc.

Assignments (subject to change)

The goal will ultimately to facilitate a 2D action platformer by the end of the term.

Date	Subject
Module 3	Collision Recognition Assignment
Module 4/5	Breakout
Module 6	Asteroids/Space Invaders … basic shooter
Module 9	Jumping Exercise
Module 11	Power-Up
Final	Final Project

Additional Information and Resources

Web Resources

www.gamaustra.com – Basically an online journal for game development

http://extra-credits.net – Excellent source of information on game development – will be used as course material frequently in class

http://www.gamedev.net/ - A site similar to gamasutra.com, many resources for game students and professionals alike

http://gameprogrammingpatterns.com/ - A site dedicated to Object Oriented Design patterns in games

Others: TBD

Grading

Quizzes/Tests 20%

Final Project 20%

Discussions 10%

Assignments 50%

(subject to change)

Instructor Policies

Teaching Philosophy

I keep my classes laid back and encourage the interaction of the entire group. One of the most powerful aspects of the classroom environment is looking at a topic from different points of view. If you have a point of view that is different from mine I openly encourage you to raise it during the discussion. The examination of a topic from all points of view will help everyone reach a greater understanding of the topic.

It is my philosophy that every person is responsible for their own education. What you get out of a class is directly proportional to what you put into it. I will do everything in my power to help you with your education but the ultimate responsibility is yours.

You are responsible for information covered in class as well as out of the book. The power of the classroom experience is to pull from multiple sources to enhance your understanding of the subject; this includes me, the book, other students and any other resource that is available.

Participation

Participation is very important. Keep up to date with chat, announcements and course materials. If there are team projects, participation in that team will be part of the grade. If teammates inform me that a student never shows up for team work sessions, or does not participate in the project, that will be a factor. In the end, poor performance in the class is usually a direct result of poor participation and/or not putting in a good effort.

Plagiarism

Plagiarism will be met with harsh consequences. I will report any incident to student services and punishment will be meted out according to school policy.

Assignments and Late Work

All assignments are due by 11:59 pm on the stated due date. Assignments received after this time are considered late.

If you are going to have trouble turning an assignment, please notify me as soon as you can, preferably by Thursday of the due week.

An excused late assignment will be granted an explicit extension.

The following rubric demonstrates my late policy for unexcused late assignments:

- Assignment turned in during due week - Eligible for 100% of points
- Assignment turned in early the week after due week - Eligible for 85% of points
- Assignment turned in later in the following week - Eligible for 75% of points
- Assignment turned in early into two weeks late - Eligible for 65% of points
- Assignment turned in late into two weeks late - Eligible for 50% of points
- This policy does not extend past the final day of the session.

Assignments that are not submitted at the due date will receive a 0 grade which will stand until other arrangements are made. If you are submitting a late assignment, you are required to communicate that to me or your assignment may not be graded.

After multiple weeks I may choose to not accept your late work.

My policy is fairly forgiving … If you are found abusing this policy; I may choose not to accept your late work

Communications

The easiest way to get in contact with is through email – **jselgrad@siu.edu** -- you may also use the Email item in the shell. When sending me emails please include the course code (CSC202) in subject line – this helps differentiate class emails from administrative. Also, if you have a question or need help please put the word question or help in the subject line.

You may also reach me on my Google Voice number (314) 399-8537. You may also text that number. *If you call that number and don't reach me – please leave a message or text or I may never see that you called.*

IMPORTANT DATES *

Semester Class Begins……………………………………………**01/20/2015**
Last day to add a class (without instructor permission): …………**01/25/2015**
Last day to withdraw completely and receive a 100% refund: ….**02/01/2015**
Last day to drop a course using SalukiNet: ………………………**04/05/2015**
Last day to file diploma application (for name to appear in Commencement program): ………………....……………………………………………**03/13/2015**
Final examinations: ………………………………………**5/11–5/15/2015**

Note: For outreach, internet, and short course drop/add dates, visit Registrar's Academic webpage http://registrar.siu.edu/

SPRING SEMESTER HOLIDAYS
Martin Luther King, Jr.'s Birthday 01/19/2015
Spring Vacation 03/07—03/15/2015

WITHDRAWAL POLICY ~ *Undergraduate only*
Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit http://registrar.siu.edu/pdf/ugradcatalog1314.pdf

INCOMPLETE POLICY~ *Undergraduate only*
An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following the term in which the course was taken, or *graduation*, whichever occurs first. Should the student fail to complete the course within the time period designated, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of *F* and the grade will be computed in the student's grade point average. *For more information please visit:* http://registrar.siu.edu/grades/incomplete.html

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. *See full policy at* http://registrar.siu.edu/pdf/ugradcatalog1314.pdf

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please visit http://gradschool.siu.edu/about-us/grad-catalog/index.html

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM CODE
http://pvcaa.siu.edu/_common/documents/Plagiarism/Guide%20to%20Preventing%20Plagiarism.pdf

MORRIS LIBRARY HOURS
http://www.lib.siu.edu/about

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

SALUKI CARES
The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For Information on Saluki Cares: (618) 453-5714, or siucares@siu.edu, http://salukicares.siu.edu/index.html

EMERGENCY PROCEDURES
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the **SIU Emergency Response Plan** and **Building Emergency Response Team (BERT)** pr ogr ams. Please reference the **Building Emergency Response Protocols for Syllabus** attachments on the following pages. *It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency*.

INCLUSIVE EXCELLENCE
SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well an essential preparation for any career. *For more information please visit:* http://www.inclusiveexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:
Tutoring : http://tutoring.siu.edu/
Math Labs http://tutoring.siu.edu/math_tutoring/index.html

WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit http://write.siu.edu/

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY
Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. *For more information visit*: http://diversity.siu.edu/#

Additional Resources Available:

SALUKINET: https://salukinet.siu.edu/cp/home/displaylogin
ADVISEMENT: http://advisement.siu.edu/
SIU ONLINE: http://online.siu.edu/