Video Game Design

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Course Discord Server: TBA
Once you have joined, type the command !tba

Course Description: This course will introduce students to the concepts and tools used in 2D and 3D real-time interactive computer video games. Our course will provide students with a theoretical and conceptual understanding of the field of game design, along with practical exposure to the process of creating a game. Topics covered in this course include graphics, parallel processing, human-computer interaction, networking, artificial intelligence, software engineering, iteration, rapid prototyping, mechanics, dynamics, flow theory, the nature of fun, game balance, and user interface design.

This course is an introductory course in video game design and production. We will focus both on both the design (ART-XXX) and the technical aspects (CSE-XXX) of creating a video game, from concept inception to prototyping through coding and playtesting. This course practices what it preaches with students earning experience points (XP) throughout the semester on an epic quest to design and implement a video game. Students will complete a variety of quests (assignments) in order to level up to the point they can pass the course.

Prerequisites:
CSE-320: ENGL 1110, C or better in either CSE-107 or CSE-113, CSE 213

Programming/Technical Aspects (CSE-320)

- Implement the software engineering practices necessary to develop video games (and other large systems) in a large development group;
- Application of computing principles used in video game design, as well as, to a lesser extent, related fields (artificial intelligence, computer graphics, networks, etc.);
- Comprehend and implement principles of mathematics required for 3D game programming and computer graphics.

- Use tools common in the development of video games, such as text editors (Visual Studio), development IDEs (Unity), and debuggers in the process of developing small to medium games.
- Recognize and apply the theoretical topic of game theory, and how that applies to multi-player games (and, to a lesser extent, artificial intelligence).

Video Game Design (ART-220 / CSE-320)

- Explain the major ethical dilemmas faced within the contemporary video game industry and logically support their own position on those dilemmas;
- Describe the technologies and platforms which modern interactive video games are developed;
- Compare and contrast the visual, aesthetic, acoustic and interactive elements of video games;
- Apply and evaluate various approaches to game design using assessment techniques (i.e. critical analysis, prototyping, playtesting, balancing);
- Understand the element of storytelling as it relates to game design and game play.

Course Requirements:

You should meet the following requirements to take this course:

1. Can attend class and lab regularly.
2. You will be expected to learn programming languages (CSE-320) and adobe platforms (ART-220) rapidly during this course! (Limited tutoring will be available). If you don't feel comfortable with this, please talk to the instructors as soon as possible.
3. Must have an appreciation for video games. This does not mean that you are a *hardcore* gamer. What this means is that you will be expected to play game(s) in this class in addition to the one you create. Another way of thinking about it is you wouldn't take a film course if you hated watching movies ...

References:

1. Game Design Workshop: A Playcentric Approach to Creating Innovating Games by Tracy Fullerton, A K Peters/CRC Press; 4th edition (August 29, 2018)*
2. Reality is Broken: Why Games Make Us Better and How They Can Change the World by Jane McGonigal, Penguin Books; 1st edition (January 20, 2011)
3. Rules of Play by Katie Salen and Eric Zimmerman, The MIT Press (September 25, 2003)
4. Creating Games: Mechanics, Content, and Technology by Morgan McGuire and Odest Jenkins, A K Peters/CRC Press; 1st edition (December 23, 2008)
5. Challenges for Game Designers, by Brenda Brathwaite & Ian Schreiber, Charles River Media; 1st edition (August 21, 2008)
6. Understanding Comics: The Invisible Art, by Scott McCloud, William Morrow Paperbacks; Reprint edition (April 27, 1994) - while this book refers to comics, many of the lessons within can be applied to game design and other forms of art. It is also written in comic book format (which just makes it fun to read)**
7. Mathematics for 3d Game Programming and Computer Graphics, by Eric Lengyel, Course Technology Cengage Learning; 3rd edition (2012)

*This book will be used as the main text for this course.
**We, as instructors, believe you will find these texts useful. You may want to find a copy.

Assessment:
Assessment in this course is different from most courses. In the true spirit of gaming, your grade in this course is based on experience points (XP). Every quest, boss battle, random encounter, etc. is worth a given amount of XP. Some quests may be repeated (or extended) for more XP. Every student begins this course with 0 XP.

This course will be divided into 10 levels. For each level, students must attain a certain amount of XP. As a student levels up, the amount of XP required to go to the next level also increases.

Our XP table is based on the XP table for Final Fantasy XIV: A Realm Reborn.

Level	Total XP Required	Letter Grade
0	0	
1	1000	
2	2000	
3	3000	
4	4000	
5	5000	
6	6000	D/D+
7	7000	C-/C/C+
8	8000	B-/B/B+
9	9000	A-
10	10000	A

Note: +/- will be awarded within each letter tier. For instance, if you earn 8,100 XP, that is just barely into the B tier, and would thus earn a B-. Similarly, earning 8,800 XP, which is almost to the A tier, would yield a B+. The +/- range will vary by semester depending on individual students and overall class performance.

For more information on how much XP can be earned for each quest, please refer to that quest's page in Canvas.

Class Management:
General:
Amy Knowles

- I have an *open door* policy, in that if my door is open, by all means stop in and say hi or ask a question. If my door is closed, then I'm head down on some task, in a meeting, off campus, etc. It's always a good idea to ping me on discord before swinging by if you are stopping by outside of posted office hours.
- I can't stress enough that discord is the best way to get in touch with me. The next best method is via email.

- If you email me, or ping me on discord, please mention VGD somewhere in the subject or question. Failure to do so makes it much harder to keep up with your emails and pings and reduces the chance of a timely response.
- Please don't hesitate to contact me if you have any problems, concerns, questions, or issues regarding the course, material, or anything else in the class.

Game Teams:

The game you will build this semester is to be undertaken with a group. Details of the group are:

- Normal group size is three or four. Expectations will not be adjusted due to smaller groups. There will be no groups of other sizes.
- In general, all group members will receive the same grade for graded assignments. However, group members will evaluate their peers and any student who appears to not be contributing may be penalized.
- Each group will be responsible for assigning tasks to its group members.
- Group members will be chosen by the instructors to ensure all groups are well rounded.

You are expected to work as a member of your group in this course and cooperate with your colleagues. Cooperation means attending group meetings, completing assignments properly and on time, letting your group know if you will be out of town, responding to email/discord messages from your group, and so on. If there is a lack of cooperation by any member, it must be brought to the attention of the instructors as soon as it happens. If the lack of cooperation is serious, the offending member's semester point total will suffer.

Aimbots (Academic Dishonesty):

- In general, we expect that you will be using code, examples, and ideas from many different websites and resources for your projects. This is allowed … within reason. Wholesale copying of an entire project is definitely NOT allowed. Using code to round out a feature is allowed. If you ever have a question about what is or is not appropriate, ask first!
- In ALL cases, you need to cite all sources at the top of the file where the code or algorithm was used AND you should note all sources in your documentation.
- Game ideas that have nothing substantially original added will be considered plagiarism.
- Failure to properly cite your sources will result in a 0XP gain for an assignment, at a minimum!
- Instructors maintain the right to utilize any further punishments noted in the student handbook under the Academic Dishonesty policy.

Resources/Hardware:

- We will be using Unity as your engine of choice for the semester. Head over to https://store.unity.com/ and download the personal (free) edition and make a unity account for yourself.
- We will be using Adobe XD/Adobe InDesign for user interface design. This software is available to you at no extra cost on all university lab computers. As programmers in the programming section of the course, you will do little to no work in this software, but it could help during group discussions if you were at least familiar with this software.
- For the game project, you will be able to decide your platform of choice. Some possibilities are: Web, Windows, Mac, iOS, or Android.

Random Encounters (Attendance and Mini-Projects):

- Attendance in lecture and lab is vital to learning material and earning XP in this course.
- There will be specific, announced class days in which a random encounter is possible. A random encounter is a quiz or in-class-activity that will provide XP. The instructor will roll a die to determine whether a random encounter will happen, or not. Some encounters will be *forced* in order to ensure the correct number of encounters occur.
- Students can *flee* one random encounter with no penalty, either by being in class and choosing not to participate or by simply not being there that day. Fleeing more than one random encounter will result in a loss of XP as you will be unable to make up the encounter.
- Random encounter days will be denoted on the schedule in Canvas.

Main Story Quest (Game Creation):

- Quests will not be handed out in class. Everything will be available online through Canvas.
- Groups/teams may not collaborate with any other groups/teams unless specified as part of the assignment.
- Assignments in this category will be divided into four main categories: Conceptualization, Pre-Production, Production, and QA/Polish.

Epic Tool Quests (Video Game Analysis):

- Like the main quest, the epic weapon quest will not be handed out in class. Everything will be available online through Canvas.
- Epic weapon quests will be completed individually. As such you may not collaborate with any other students unless specified as part of the assignment.
- As the title suggests, this quest will require a number of steps in order to build a completed epic weapon which you will be able to use against the bosses you encounter during this course.

Boss Battles (Midterm and Final Exam):

- There will be one midterm boss battle and a final boss battle during the course of the semester.
- Any boss battle that is missed due to any absence that is not a University Excused Absence will result in a ZERO (0) XP gain.
- Any boss battle that is missed due to a University Excused Absence or due to circumstances that are approved by the instructors ahead of time must be made up within a week of the missed exam.

Late Policy:

- Less than 24 hours late -> Max 90% of XP can be earned.
- Less than 48 hours late -> Max 75% of XP can be earned.
- 48 hours or more late -> No XP earned.

This Syllabus:

This syllabus is to be considered a reference document that can and will be adjusted through the course of the semester to address changing needs. This syllabus can be changed at any time without notification. It is up to the student to monitor this page for any changes. Final authority on any decision in this course rests with the instructors, not with this document.