New York University Tandon School of Engineering

Department of Integrated Digital Media

DM-UY 4913-A Special Topics in Digital Media: Game Development with Unity **Fall 2024**

Professor Seth S. Scott

Meeting Times & Location

- Tuesday & Thursday, 8:00am - 9:50am; Room 309 (370 Jay)

Contact Information

- Email: sss782@nyu.edu
- Phone: (505) 550-6996
- Office Hours: Thursday 10-11am (by request)

Course Prerequisites

There are no course prerequisites. This is an introductory game development course and there are no expectations other than basic computer knowledge. Some knowledge of computer programming, 2D and 3D asset creation, or prior knowledge of the Unity engine is welcome but not required.

Course Description

In this class, students will receive an intensive tutorial of the Unity game engine, be exposed to the different aspects of the game development process, and gain a basic understanding of the principles of game design. Heavy emphasis will be placed on understanding Unity's place in the game development pipeline and mastering its unique world-building and scripting capabilities. This is a project-based class where students will get the opportunity to use what they have learned in lectures to develop their own games. Students will work individually and by the end of this course will have completed multiple games and ideas in Unity.

Course Structure

- Tuesday classes will be a guided lecture/exercise in Unity
- Thursday will be a lab class in which students can begin to implement the things we learned this week. I will be available for one-on-one help through class on Thursday.

Readings

- Technical information about the Unity Game engine will be largely available through the official Unity documentation and online tutorials.
- Students will also need to pick one Boss Fight Book to read and write/present a short report on their book and what inspired them, game design-wise, from the readings.

Grading

Your final grade for this course will be broken down into the following components:

- **Attendance/Participation:** 30%
- **Book Report:** 10%
- **Project 1:** 15%
- **Project 2:** 15%
- **Final project:** 30%

Attendance Policy

Students are allowed one (1) unexcused absence. Any further unexcused absences will result in a loss of 5 points from the participation component listed in the grading section. **This is roughly equivalent to ⅓ of a grade penalty in most cases**.

Class Recordings

https://stream.nyu.edu/playlist/dedicated/1_b6f7mpat/

Schedule

Week 1: Syllabus Overview, Unity Setup [09/03, 09/05]

- Syllabus overview

- Ideas for weekend thinking, exercises and exploration of online resources for Unity
- Gameobjects and the Component System
- Scripts & Sprites

Week 2: Scripting/IDE in Unity & Physics Introduction [09/10, 09/12]

- Basics of programming in C#
- Project 1 Assigned
- The role of Physics and Colliders in Unity

Week 3: Basic Movement, Input, Bools and Colliders [09/17, 09/19]

- Basic scripting and control of Game Objects, Rotation, Movement
- Understanding Bools, Collisions and Instantiation of GameObjects

Week 4: Unity UI System Implementation [09/24, 09/26]

- UI design and implementation
- Overview of building UI for multiple resolutions

Week 5: Sound & Audio Design [10/01, 10/03]

- Working with music, sfx and audio design

Week 6: PROJECT 1 FINAL LAB / **P1 DUE** [10/08, 10/10]

- Project #1 Final Lab time TUESDAY to help wrap up projects
- Project 1 Due THURSDAY 10/10

Week 7: Project 2 Startup LAB [**10/15 NO CLASS**, 10/17]

- Select idea for Project #2 and start work Lab Thursday

Week 8: Adv Unity Systems/PlayerPrefs [10/22, 10/24]

- Exploring saving/data management by using Unity PlayerPrefs to store data between sessions and multiple playthrough styles.
- Scene management,

Week 9: Animation and the Animator [10/29, 10/31]

- A deep dive in Unity's Animation features and techniques

Week 10: Tuesday Playtest, Thursday Final P2 Lab [11/05,11/07]

- This week will be dedicated to your second project. We will each playtest our game before our final projects are playable next week.

Week 11: **Project 2 DUE**, Final Project ideas [11/12, 11/14]

- Project 2 due Tuesday 11/12
- Final project proposals due in stand up at end of lab on 11/14.

Week 12: Unity AI and Navigation [11/19, 11/21]

- Understanding ways to start creating dynamic and interactive AI for games

Week 13: In-depth Topics by Request: [11/26, **11/28 NO CLASS**]

- Post-processing in Unity
- An in-depth look in Line/Trail Renderers
- Other topics by request! Please think of anything throughout the semester and we can tackle some fun ideas to expand here

Week 14: Work Week for Final Project, **Book Report DUE** [12/03, 12/05]

- Specialized help individually for students ramping up to presenting their final projects
- Book Report for Boss Fight Book choice DUE THURSDAY

Week 15: **Final Project DUE** [12/10, 12/12]

- Final LAB to for help TUESDAY
- Final project due and gameplay on THURSDAY 12/12

Moses Center Statement of Disability

If you are a student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 3rd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct

A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic

evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
2. Fabrication: including but not limited to, falsifying experimental data and/or citations.
3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.
4. Unauthorized collaboration: working together on work that was meant to be done individually.
5. Duplicating work: presenting for grading the same work for more than one project, or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

ACADEMIC ACCOMMODATIONS

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If you are experiencing an illness or any other situation that might affect your academic performance in a class, please email the Office of Advocacy, Compliance and Student Affairs: eng.studentadvocate@nyu.edu.

STATEMENT ON INCLUSION

The NYU Tandon School values an inclusive and equitable environment for all our students. I hope to foster a sense of community in this class and consider it a place where individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations, and abilities will be treated with respect. It is my intent that all students' learning needs be addressed, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. If this standard is not being upheld, please feel free to speak with me.