

AET 339 Virtual Reality for Games

UID: 20725

Meetings: MWF 11:00-12:00

Location: DFA 4.106

Text: N/A

Instructor: MJ Johns

Office Hours: MWF 12:30-1:30

Abstract

An introduction to building interactive and engaging Virtual Reality experiences for games. This will include ideation and concept design, building virtual environments, scripting interactions for head-tracking and hand-tracking, adding animations and particle effects, as well as playtesting and iterating based on user feedback. Devices: HTC Vive, Oculus Rift, Google Daydream.

Assessment

All homework assignments and in-class activities are equally weighted toward 30% of the final class grade and are pass/fail. Two larger projects will be worth 30% each, one due at midterms and one due at the end of the semester, and will be graded based on the provided rubric. Assignments are due by the start of class on the due date. The remaining 10% will be based on attendance and professionalism.

No late work will be accepted. If you feel you will not be able to complete all work on time, you should ask the instructor for a grade of Q or drop before the deadline.

Group projects will receive one grade shared by all team members, except in circumstances where teammate issues are discussed with the instructor prior to submitting the assignment.

Note: If you cannot attend class for any reason, please send an email and attach any class work as needed, and talk to your classmates to find out what you missed.

Classroom Policy

Devices

- Must be kept in silent mode unless an emergency notification is expected (please discuss this with me prior to class).
- Can be used for research and class note taking, but not for social media (unless related to class activities)

Food/Drink

- Food is not allowed in class.
- Drinks in closed containers are permitted but must be kept on the floor or out of sight when not in use.

Required Equipment

All students **MUST** have access to a portable computer. Either Mac or PC is fine. A VR-Ready laptop will be provided to teams during class and lab time.

Textbook / Resources

(Optional, but recommended) <https://www.pluralsight.com/courses/unity-vr-fundamentals>

Calendar

Week		Assignment Due
1	1/23 Course Intro, Unity Basics 1/25 Play VR Games (Foundry)	
2	1/28 Virtual Space Design, Importing SDK 1/30 Lab 2/1 Testing Unity scenes in VR	1/28 HW 1: Analysis of VR Games
3	2/4 Role Survey, Team Formation 2/6 Brainstorming and Planning 2/8 Version Control	2/6 Activity 1: Trello Board
4	2/11 Interface Considerations for VR 2/13 Lab 2/15 Interaction Design	2/15 HW2: Playable Space
5	2/18 Physics 2/20 Scripted Interactions 2/22 Lab	2/18 HW3: Interaction List
6	2/25 Spatial and Binaural Audio 2/27 Lab 3/1 Playtest	3/1 HW4: Playable Executable
7	3/4 Iterating based on Feedback 3/6 Team Checkins 3/8 Progress Presentations	3/4 Activity 2: Feedback notes and analysis
8	3/11 Playtest 3/13 Lab 3/15 Project Showcase	3/15 Project 1: Room Scale VR
9	<i>3/18 - 3/22 Spring Break</i>	
10	3/25 Play VR Games (Google Daydream) 3/27 Android Build Process and SDKs 3/29 Role Survey, Team Formation	3/27 HW5: Analysis of Mobile VR Games
11	4/1 Brainstorming and Planning 4/3 Art Consideration for Mobile VR 4/5 Lab	4/1 Activity 3: Trello Board
12	4/8 Mobile VR Interaction Design 4/10 Scripting for Mobile 4/12 Lab	4/10 HW5: Interaction List
13	4/15 Audio Considerations for Mobile VR 4/17 Lab 4/19 Interface Considerations for Mobile VR	
14	4/22 Playtest 4/24 Iterating based on Feedback 4/26 Progress Presentations	4/22 HW6: Playable Mobile Demo 4/24 Activity 4: Feedback notes and analysis
15	4/29 Optimizing Particles for Mobile 5/1 Lab 5/3 Playtest	
16	5/6 Lab 5/8 Mobile vs. Room Scale Discussion	5/10 Project 2: Mobile VR

Units of Study

- **Foundations**
 - Intro to VR in Unity
 - VR design concepts
 - Exploration of VR Hardware
- **Applications**
 - Solving problems and creating interactive experiences
- **Systems**
 - Interface and experience design
 - Spatial awareness

Process

We will work through demonstrations, projects, and a number of technical/creative challenges to learn about VR design in Unity.

Reference

A short list of useful resources for Unity:

- <https://unity3d.com/learn/tutorials>
- <https://www.pluralsight.com/courses/unity-game-prototyping>
- <https://www.pluralsight.com/courses/swords-shovels-prototyping-game-systems>
- https://www.youtube.com/watch?v=rrSymQOObwE&list=PLyALP-npqseF97ShLQ5ZLS-Bqm_zu2Hve

Grades

Homework and In-Class Activities: 30%

Attendance and Professionalism: 10%

Project 1 - Room Scale VR: 30%

Project 2 - Mobile VR: 30%

Final grades will be determined on the basis of the following rubric. Please note: to ensure fairness, all numbers are absolute, and will not be rounded up or down at any stage. Thus a B- will be inclusive of all scores of 80.000 through 83.999. The University does not recognize the grade of A+.

A = 94-100

A- = 90-93

B+ = 87-89

B = 84-86

B- = 80-83

C+ = 77-79

C = 74-76

C- = 70-73

D+ = 67-69

D = 64-66

D- = 60-63

F = 0-60

Class Attendance Policy

As detailed above, attending class during the scheduled meeting times earns professionalism credit. Credit is NOT earned for arriving late, leaving early, or failing to attend class meetings. If attending a scheduled class meeting is not possible, students are expected to promptly notify the instructor of extenuating circumstances.

Q Drop Policy

The State of Texas has enacted a law that limits the number of course drops for academic reasons to six (6). As stated in Senate Bill 1231: "Beginning with the fall 2007 academic term, an institution of higher education may not permit an undergraduate student a total of more than six dropped courses, including any course a transfer student has dropped at another institution of higher education, unless the student shows good cause for dropping more than that number."

University Attendance Policy: Religious Holy Days

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence.

Services for Students with Disabilities (SSD)

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact Services for Students with Disabilities (512-471-6259, ssd@austin.utexas.edu, <http://ddce.utexas.edu/disability/>, or videophone 512-471-6644). Please provide documentation of your needs during the first week of class, if possible, so that I can make the necessary accommodations promptly.

Academic Integrity

The University's Honor Code states that "As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity." You are expected to maintain absolute integrity and a high standard of individual honor in scholastic work undertaken at the University. At a minimum, you should complete any assignments, exams, and other scholastic endeavors with the utmost honesty, which requires you to:

- acknowledge the contributions of other sources to your scholastic efforts;
- complete your assignments independently unless expressly authorized to seek or obtain assistance in preparing them;
- follow instructions for assignments and exams, and observe the standards of your academic discipline;
- and avoid engaging in any form of academic dishonesty on behalf of yourself or another student.

(adapted from http://deanofstudents.utexas.edu/sjs/acint_student.php)

Academic Dishonesty

In promoting a high standard of academic integrity, the University broadly defines academic dishonesty as including any act designed to give an unfair or undeserved academic advantage, such as:

- Cheating
- Plagiarism
- Unauthorized Collaboration / Collusion
- Falsifying Academic Records

- Misrepresenting Facts (e.g., providing false information to postpone an exam, obtain an extended deadline for an assignment, or even gain an unearned financial benefit)
- Multiple submissions (submitting essentially the same written assignment for two courses without authorization to do so)
- Any other acts (or attempted acts) that violate the basic standard of academic integrity

(adapted from http://deanofstudents.utexas.edu/sjs/acadint_what_is.php)

Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University.

(from http://deanofstudents.utexas.edu/sjs/acint_faculty_syllabus.php)

Plagiarism

“Plagiarism” includes, but is not limited to, the appropriation of, buying, receiving as a gift, or obtaining by any means material that is attributable in whole or in part to another source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course requirement (from Sec. 11-402, <http://catalog.utexas.edu/general-information/appendices/appendix-c/student-discipline-and-conduct/>).

Behavior Concerns Advice Line (BCAL)

If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual’s behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit <http://www.utexas.edu/safety/bcal>.

Emergency Evacuation Policy

Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors of the classroom and the building.
- Remember that the nearest exit door may not be the one you used when you entered the building.
- If you require assistance to evacuate, inform me in writing during the first week of class.
- In the event of an evacuation, follow my instructions or those of class instructors. Do not re-enter a building unless you’re given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

Student Support Services

There are numerous free and/or low-cost support services available to students at UT. They include (but are not limited to) the following:

Fine Arts Career Services (512-232-7333, utexas.edu/finearts/careers) provides a full range of services and resources to support students and alumni.

The Undergraduate Writing Center

(512-471-6222, uwc.utexas.edu) helps students with every phase of writing assignments for their courses.

The Sanger Learning Center (512-471-3614, utexas.edu/ugs/slc) provides study skills, time-management, and note-taking courses.

University Health Services (512-471-4955, healthyhorns.utexas.edu) provides medical and health promotion services for currently enrolled students and some non-students who are officially enrolled in certain University programs.

The Counseling and Mental Health Center (512-471-3515, cmhc.utexas.edu) helps students with their personal concerns so that they can meet the daily challenges of student life.

UT Electronic Mail Notification Policy

Electronic mail (e-mail) is a mechanism for official University and instructor communication to students. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University- and course-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily, but at a minimum, twice per week.

It is the responsibility of every student to keep the University and instructor informed of changes in his or her official e-mail address (do so at https://utdirect.utexas.edu/utdirect/bio/address_change.WBX). Consequently, e-mail returned to the University with "User Unknown" is not an acceptable excuse for missed communication. Similarly, undeliverable messages returned because of a full inbox or use of a spam filter will be considered delivered without further action required of the University or instructor. (see <http://www.utexas.edu/cio/policies/university-electronic-mail-student-notification-policy>)