PROJECTS IN VR
Creating Project-based VR experiences
EMAR 440 / CSCE 492
http://cse.unl.edu/~cbourke/VirtualReality/
Spring 2024
Class Meets: M, W, & F - 3:30 pm - 5:00 pm in CEMA 243

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Course Prerequisites:
EMAR 282 – Digital Modeling

Course Description:
Working in groups combining Emerging Media Arts AND Computer Science undergrads, students will step through a series of short tutorials in Unity and the C# programming language to build their skills in both development and communication. The final objective of each group in the class is to create an original simulation experience in Virtual Reality. Specifically, this course utilizes the HTC Vive Pro head mounted device (HMD).

In addition to allowing students to sandbox projects explored in a VR environment, this course aims to advance interdisciplinary education between the two schools. The course will develop new experiences and understanding for students from both disciplines.

In part, Projects in VR is a basics-of-VR-development course – that quickly shifts into a group-driven, project-based class. Simulation testing must be done on the Windows workstations and HTC Vive Pros provided in the classroom / lab. Any needed assets can be created utilizing just about any 3D software package available – including *Autodesk Maya*, *Cinema 4D*, *3D Studio Max*, and even *Unity* itself.

The depth of what can be accomplished within these combined software packages is likely deeper than you've experienced in many other classes you may have taken to date - and can be overwhelming at first. Given the time constraints of our class periods and the semester, it will not be possible to explore every function available. In order to get the most out of this class, students are required to push their understanding of the potential for VR by pushing themselves beyond the in-class exercises alone – this CAN mean looking for solutions on your own and learning new skills above and beyond to fulfill the needs of your projects! Students will be graded on the creativity evidenced in the final project and on their individual growth and understanding of both software and creativity throughout the semester. Keep in mind that this is a group-centric AND project-based class. The class will be graded on overall effectiveness (communication, inclusion, problem-solving, etc.) as a TEAM.

Course Objectives:
By the end of this course you will;
• learn to navigate & create within the *Unity* software package.
• understand the production pipeline for VR.
• learn to integrate 3D assets into a virtual environment.
• develop a sense for good communication between different disciplines on the same project.
• have generated and completed a VR experience as a team.

Evaluation.

This syllabus may be subject to change during the course

Evaluation will be based on the following:
- Attendance (see Attendance Policy below)
- Participation in all class exercises, discussions, and assignments.
- Active participation in class discussions and peer critiques.
- Completion of all assignments and milestones – and **on time**.
- Completion and presentation of the final project.

Grading Breakdown:

Module Assignments (three)	30%	(*10% each*)
Hitting Milestones (three)	30%	(*10% each*)
Final Project & Presentation	40%	
TOTAL	**100%**	

Grading**:

A+ = 97% to 100%	**C** = 74% to 76.9%
A = 94% to 96.9%	**C-** = 70% to 73.9%
A- = 90% to 93.9%	**D+=** 67% to 69.9%
B+ = 87% to 89.9%	**D** = 64% to 66.9%
B **=** 84% to 86.9%	**D-** = 60% to 63.9%
B- = 80% to 83.9%	**F** **=** 59.9% & Below
C+ = 77% to 79.9%	

**Note on Grading:
Only exceptional work of professional quality will be considered an "A". *Late assignments will be penalized* one full letter grade for each day they are late. **Any work that is one week or more late will not be accepted and given a zero point score for that assignment,** unless an exemption or permission has been granted due to extraordinary circumstances. *No incomplete grades will be given*. **All assignments are due in class**, unless otherwise assigned. I do not give extra credit work or assignments.

Grade Disputes:
Take one day to thoroughly & objectively consider my comments and those of the class. Then discuss your disagreement with me *within one week* of receiving your grade. Grading will not be discussed after the one-week period.

UNL Course Policies and Resources:
https://executivevc.unl.edu/academic-excellence/teaching-resources/course-policies

Class Participation & Attendance:
It is essential that you attend – and *actively* participate. **You are expected to attend all class meetings and arrive on time**. Anyone who arrives after the attendance is taken will be considered late. **Three instances of tardiness will be equivalent to one unexcused absence.**

As stated in the Department of Theatre Arts bylaws:
> **"A student who misses an equivalent of one week's worth of classes, then each subsequent missed class will result in the loss of a full letter grade." "Students may be granted an excused absence, which does not count against them, if they provide a doctor's note, or have other extenuating circumstances, such as a car accident or death in the family."**

This course meets three times a week. Each student will be allowed a maximum of 3 unexcused absences. Any additional and subsequent unexcused absence beyond the 3 will result in the lowering of the final grade for the course as described in the bylaws above. Any requests for excused absences must be received in writing at least 1 week prior to the anticipated date of absence, unless for illness. In the case of illness, the instructor must be notified **prior to the start of class.**

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You will be expected to spend at least 2 to 5 hours (per week) outside of class meeting times on readings, working on your assignments and projects. It is important for you to practice (after class) what has been covered during class so that you may raise any questions or problems at the next class session. It will not be in your best interest to procrastinate because of the large amount of material that will be covered during this course.

If you need any special accommodations or if circumstances arise that may affect your participation, please talk to me as soon as possible.

<u>Classroom and Computer Lab Rules and Procedures:</u>
1. No food or drink in the computer labs - (I will allow beverages in the classroom DURING class - ONLY if they have a **<u>sealable</u>** lid).
2. Only currently enrolled students may use the computer lab in CEMA 243 and the small EMA Lab; No friends or family.
3. Always make a back-up your work on the server, your USB drive, GitHub, the server, or other removable media (or the server).
4. The computers in this lab during class meetings are strictly for instructional purposes only. Checking of e-mail and similar abuse of use during class sessions will not be tolerated.
5. While class is in session, this classroom is not an open lab for students. It has been reserved for class sessions. Students will need to use these machines during times when class is NOT is session.
6. Card access to the Carson Center (CEMA) building and any lab, room, or classroom in CEMA is for use only by registered students of the Carson Center, unless prior permission is granted by the instructor or Megan McMasters. Abuse of this privilege may result in the revocation of card access privileges to CEMA.
7. All cell phones should be placed on mute / vibrate during class times. If your phone goes off during class (this includes rings and alerts of any type), you will bring doughnuts for the class during the next class time.

<u>Vive Equipment Rules:</u>
1. Do not remove any piece of the Vive equipment from the designated area.
2. Be extremely careful with the equipment, replacing it would not be easy and any amount of time that the equipment is out of order impacts other students' ability to use it and be productive. Be aware of your surroundings and be sure to use the "chaperone" mode to avoid hitting a wall and other equipment. Always place the wand straps around your wrists to avoid losing your grip. You should always use the Vive with another person present to help you with cord management and to avoid injury or damaging the equipment.
3. For the health and safety of others, do not use the equipment if you have open sores; avoid using excessive makeup, perfumes, colognes, and other items that may cause irritation to other users. After use, clean the equipment in the UV station **<u>before</u>** handing it off to another user! If you are the last to use the headset and controllers, place the items on the UV station and set it to the clean cycle. You may leave the headset in the UV station after you are finished. **<u>You must continue to wear your face covering while using the Vive headsets.</u>**
4. Be good custodians of the equipment; plug the wands back in so they are charged for the next user, keep the areas clean and organized.
5. Be good custodians of the course Steam account(s), which are used for the convenience of everyone. Don't purchase unapproved software and **<u>do not logout</u>** or misuse the account(s).
6. The equipment is to be used only by students registered for this course. Make sure you are giving everyone a chance to use the equipment.
   - The equipment in CEMA 243 is available during the course meeting times. However, the room is used throughout business hours and access will be limited Monday - Thursday from 9 AM to 5 PM for other classes. Access after 5PM is available by using your N-card. We will post a schedule of when the room is needed for other needs.
7. The software can be quite finicky. It is everyone's responsibility to keep it in working order, so you may need to troubleshoot it from time to time and to make sure your fellow students know and follow best practices (if you fix it, document the problem and how you fixed it for others). Software and firmware updates are frequent, so please keep them up-to-date.

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Major Topics and Assignments:

WEEK 1	ACTIVITY	ADDITIONAL NOTES	ASSIGNMENTS:
1/22 (M)	Intro – Unity core concepts, interface, & trying out VR. Module #1 (Intro to Unity).		
1/24 (W)	Module #1 (Intro to Unity – start teamwork portion)		
1/26 (F)	Module #1 – Finish Up		
WEEK 2			
1/29 (M)	Present Module #1.		**Assignment #1** – First module presentation.
1/31 (W)	Start Module #2 (Intro to SteamVR)		
2/2 (F)	Module #2 (Intro to SteamVR)		
WEEK 3			
2/5 (M)	Present Module #2.		**Assignment #2** – Second module presentation.
2/7 (W)	Start Module #3 (User generated)		
2/9 (F)	Module #3 (user generated)		
WEEK 4			
2/12 (M)	Module #3 (user generated)		
2/14 (W)	Module #3 (user generated)		
2/16 (F)	Module #3 (user generated)		
WEEK 5			
2/19 (M)	Module #3 (user generated)		
2/21 (W)	Module #3 (user generated)		
2/23 (F)	Present Module #3. (Tutorial Papers Due)		**Assignment #3** – Third module presentation.

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WEEK 6
2/26 (M)   Project scoping day.
                  (group selection)
                  Separate into groups and
                  work on scope and plan.

2/28 (W)   Present final project planning   **Final Project assigned**
                  document detailing team
                  responsibilities, roles, & plan.

WEEK 7
3/4 (M)   Project studio time

3/6 (W)   Project studio time

WEEK 8
3/11 (M)   **SPRING BREAK**   **SPRING BREAK**   **SPRING BREAK**

3/13 (W)   **SPRING BREAK**   **SPRING BREAK**   **SPRING BREAK**

WEEK 9
3/18 (M)   Project studio time

3/20 (W)   Presentation Day   **Milestone #1**

WEEK 10
3/25 (M)   Project studio time

3/27 (W)   Project studio time

WEEK 11
4/1 (M)   Project studio time

4/3 (W)   Project studio time

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WEEK 12
4/8 (M)   Presentation Day   **Milestone #2**

4/10 (W)   Project studio time

WEEK 13
4/15 (M)   Project studio time

4/17 (W)   Project studio time

WEEK 14
4/22 (M)   Project studio time

4/24 (W)   Project studio time

WEEK 15
4/29 (M)   Presentation Day   **Milestone #3**

5/1 (W)   Project studio time

WEEK 16
5/6 (M)   Project studio time

5/8 (W)   Project studio time

FINALS
Tues, May 14   FINAL PRESENTATION   FINAL PRESENTATION   FINAL PRESENTATION
7:30 to 9:30 AM

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