ART 337
VR & AR
Design

Course Description

This studio course introduces the fundamental concepts and skills of immersive virtual reality (VR) and augmented reality (AR) design and explores the artistic and critical potential of AR and VR content researching both historical predecessors and contemporary trends incorporating traditional art skills such as drawing, painting, and design.

Primary Software Used: **Unity, Adobe Aero & other Adobe applications**
Levels: Undergraduate

Overview

This course consists of lectures, technical workshops, projects as well as class discussions and critiques of student work. Students will also research arts and artists working with AR and VR technologies. While no prior expertise in AR or VR technologies is required, a certain level of independent research and study beyond the introductory workshops in class is expected depending on students' prior art and design media experience.

Students will use Unity (for VR) and Adobe Aero (for AR) as the main software applications in the course, creating two main projects – one VR project using Google Cardboard and/or Oculus headsets and the other AR project with mobile phones. These will allow students to understand the concepts of immersive content and produce a meaningful outcome.

Objectives

- ❏ Understand and be able to describe the advanced technologies of Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and Extended Reality (XR)
- ❏ Obtain knowledge of keywords in the emerging field of augmented and virtual reality art.
- ❏ Learn & experiment with current VR devices and software.
- ❏ Research to creatively solve technical and design problems.
- ❏ Apply fundamental design principles and software tools to incorporate with their creative process and produce students' own immersive 3D experiences.
- ❏ Apply technical, aesthetic, and conceptual understanding of immersive design in the communication of one's work and the work of others

Materials

- ❏ Blackboard access *
- ❏ An external drive for backup (Plus Additional online storage for backup of files: Flash drives, Student account One Drive, SharePoint, and/or Google Drive)
- ❏ Headset or earbud
- ❏ Sketchbook
- ❏ Mobile phone, Google cardboard.

Recommended Reading

Unity 3D Tutorials - https://unity3d.com/learn/tutorials

Unity Forum - https://forum.unity.com/

Unity Answers - https://answers.unity.com/index.html

Adobe Areo Learn and Support - https://helpx.adobe.com/aero/user-guide.html

Oculus Experience - https://www.oculus.com/experiences/rift

https://www.museumnext.com/article/how-museums-are-using-augmented-reality/

https://www.artsy.net/article/artsy-editorial-collecting-virtual-reality-art

https://www.theartnewspaper.com/analysis/extended-reality-ar-vr

https://www.aam-us.org/programs/center-for-the-future-of-museums/immersion-in-museums-ar-vr-or-just-plain-r/

https://www.museumnext.com/article/how-museums-are-using-augmented-reality/

Revisions To Syllabus

The information contained in this syllabus is subject to revision at the discretion of the instructor. Students will be notified of any changes that will be made.

Grading

Your grade is based on Course Assignments (80%), in-class exercises (10%), and attendance (10%). Readings (if there are) are due before the beginning of class for the date assigned so that you are familiar with the topics and prepared for discussion. Assignments are due at the beginning of class unless otherwise notified by the instructor. **Late submissions will be dropped up to 5 points out of 100 per day.**

In professional practice, graphic designers solve client problems that often have tight time requirements. You will be given as much time as possible to work during the studio, but discussion and critiques will consume a significant amount of the time. One-thirds of the work for this class is expected to be accomplished outside of class. **Use the Webb 410 General Computer Lab and FAIC 330/327 Open Lab, 313 Digital Resource Room** (available with instructor permission for classwork only), online help, and textbooks (if applicable)—including associated websites—as reference tools to complete work and to practice techniques.

The primary objective of the course is to provide creative solutions to design problems, not to learn design software from the beginning. You should have basic skills in design software and use it as a design tool with certain proficiency. Evaluation of Individual works is based on a **creative problem-solving approach, use of elements/principles, craftsmanship/professionalism, and improvement/growth.**

A 100–95 90% | **B** 89 85 80% | **C** 79 75 70% | **D** 69 65 60% | **F** 59% or below (A grade of C, 75% is the minimum grade which counts toward your major.)

A. Superior execution; maximum originality; excellent concentration and initiative; cooperative with peers; excellent judgment; superior attitude and dedication; highly imaginative, original, and experimental; very consistent in work ethic; a significant improvement

B. Strong execution and originality; adequate concentration and initiative; cooperative with peers; good attitude, dedication, and judgment; imaginative and experimental; consistent in work ethic; noticeable improvement.

C. Average execution, concentration, organization, and attitude; some imagination and originality; lacks some consistency in work ethic; some improvement.

D. Poor execution and improvement; limited originality; little concentration and organization; poor judgment; evades responsibility and cooperation; lacks work ethic, concentration, organization

F. Fails to execute to minimum standards, insignificant improvement; no originality; minimum concentration and organization; evades responsibility and cooperation; no work ethic.

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Attendance Policy

You are required to attend each class in its entirety. More than 2 absences, 2 late arrivals or early departures will affect your grade negatively unless you have a doctor's note. Attendance will be taken at any moment in class. It is your responsibility to see me during class if you arrive after attendance is taken. Email me ahead of time if you cannot attend class, if you will be late for class, and if you need to leave early for class. This does not constitute an excused absence, it is a professional best practice.

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Class Rules

No food or drink in the Computer Lab. Smart-phones: no cell calls and no earbuds during lectures or demonstrations. Do not use the Internet for anything other than related class subjects. Use break time instead.

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Department of Art & Art History Policy on Returning Artwork and Other Assignments

Assignments will be returned during scheduled class time, instructor's office hours, or by special arrangement with the instructor. The instructor will hold assignments for six weeks following the end of class. Assignments not picked up during this period will become the property of the university and may be discarded.

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Assistance at the Writing Center

The Eastern Writing Center, located in the ASC and staffed by trained peer tutors, is available to help all students with their writing. The Writing Center supports the liberal-arts mission of Eastern by helping students with their writing from any class, at any stage, from brainstorming and drafting to revision to proofreading and editing. We help students do their own work and do it more comfortably and confidently. Any student can and should use the Writing Center. The process of talking with readers about writing and getting feedback on student writing is something all writers do and can benefit from. Students can either drop into the Center or make an appointment by going to the "Useful Links" column on the Current Students webpage and selecting

"GradesFirst" http://www.easternct.edu/index/current-students/.

Students are asked to bring copies of any assignment sheets to the Writing Center, so tutors know what is expected of the assignment.

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Assistance with Academic Advising and Subject Tutoring at the Academic Service Center

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Students are encouraged to use the support offered by the Academic Services Center (ASC) located on the ground floor of the Library. Advising Services and tutoring in math, writing, and other subjects, including supplementary instruction, are available. The ASC also offers Peer Academic Coaching (PAC) assistance with study techniques, time management, "Eastern in 4" planning and understanding learning styles. For further information about our services, please call 465-4625 or check the ASC

website at

https://www.easternct.edu/academic-services/index.html

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Office of Access Ability Services (OAS)

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Eastern Connecticut State University is committed to following the requirements of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you are a student with a disability (or think you may have a disability) and require adaptations or accommodations, or assistance evacuating a building in the case of an emergency, please contact the Office of AccessAbility Services (OAS) at 860-465-0189 to discuss your request further. Any student registered with the OAS should contact the instructor as soon as possible for assistance with classroom accommodations. Please note that accommodations are not retroactive, and must be communicated through a Letter of Accommodation which is drafted by the OAS. The link to the OAS website is:

http://www1.easternct.edu/accessability/

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Cheating, Plagiarism, and Personal Misconduct

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Students are responsible for familiarizing themselves with the University's numerous policies and procedures contained in the University Catalog and Student Handbook. The Code of Conduct policies and the Policy on Academic Misconduct are of special significance, since cheating, plagiarism, and personal misconduct are strictly prohibited and carry severe penalties. Students should read and understand Eastern's Academic Misconduct Policy, which can be found in the student handbook.

https://www.easternct.edu/student-affairs/studenthandbook.html

All violations will be handled under the procedures established in this policy.

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Student Sexual Misconduct Policy

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Title IX of the Education Amendment of 1972, as well as the Board of Regents Policy on Sexual Misconduct Reporting, Support Services, and Processes, prohibit acts of sexual misconduct – sexual harassment, sexual assault, sex-based discrimination, dating violence, domestic violence, stalking, and inappropriate relationships between employees and students. If you or someone you know has been or experiences harassment or assault, resources are available with the Sexual Assault & Interpersonal Violence Response Team (SAIV-RT). Alleged violations can be reported to the Title IX Coordinator in the Office of Equity and Diversity at 860-465-5791. Reports to law enforcement can be made to Eastern Connecticut State University Police Department at 860-465-5310. To receive support and advocacy, please contact the Coordinator of the Sexual Assault & Interpersonal Violence Response Team (SAIV-RT) at 860-465-4314. You may also visit the SAIV-RT website at

https://www.easternct.edu/.../sexualassaultpolicyandprocedures.html for more information including a list of confidential resources.

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Student Crisis Statement

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Any student who is facing challenges (i.e. mental health, securing food/housing) and believes this may affect their performance in the course is urged to contact the Dean of Students at 860-465-5244 for support. Students experiencing an immediate threat to their safety or wellbeing should contact 24-hour emergency services by dialing 911 or the Eastern's University Police Department: 860-465-5310.

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Final Examination Statement

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University policy states that "No examination shall be given during the final week of scheduled classes of a full semester course." Faculty must receive prior approval from the Vice-President of Academic Affairs in order to schedule an examination during the final week of classes. Faculty may, with approval from the Vice-President of Academic Affairs in consultation with the Academic Dean and Registrar, hold a single exam session for all sections of the same course. Students will be notified of the exam date, time, and place on the course syllabus.

Course Outline

WEEK 1		**COURSE INTRODUCTION - SYLLABUS REVIEW & SURVEY**
9.11.23		**EXERCISE 1 - GLOSSARY QUIZ**

Visit the website below, and study the terms related to VR & AR. Use this page as a reference, please give the right answer to the quiz on the blackboard.

https://delight-vr.com/xr-glossary/

PUBLISH AND SHARE YOUR AR(No submission needed)

https://helpx.adobe.com/aero/how-to/share-augmented-reality-experiences-aero.html?playlist=/services/playlist.helpx/products:SG_ADOBEAERO/learn-path:key-techniques/playlist:topic/set-header:animation/en_us.json&ref=helpx.adobe.com

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WEEK 2

Exercise

9.18.23

1

DUE
Assignment

1

EXERCISE 2 - Creating tattoo inspired augmented reality

https://helpx.adobe.com/aero/how-to/augmented-reality-tattoo-design-aero.html?playlist=/services/playlist.helpx/products:SG_ADOBEAERO/playlist:topic/learn-path:key-techniques/set-header:get-started/en_us.json&ref=helpx.adobe.com

Create a QR code for this exercise and upload to the blackboard.

ASSIGNMENT 1 - AR BUSINESS CARD
Students will design their own or their business AR business card. Students must consider the key elements they want to through AR, such as your company logo, products, services, or interactive elements like videos or 3D models. Students are welcome to use any art, design & media assets they already have or create new assets. Design outcomes must include time based media, selfy, and interactivity.

ASSIGNMENT 1.1 Design Research & Concept
Create two concept boards with mood boards and completely designed business card images. If you do not have one you should create it before starting the concept boards.
In your concept boards, you should include ideas on how to use media assets and interactivity.

WEEK 3

Exercise

9.25.23

2

DUE
Assignment

1.1

DUE

DESIGN CONCEPT PRESENTATION

EXERCISE 3 - BEHAVIOR AND INTERACTIVITY

https://helpx.adobe.com/aero/how-to/integrate-interaction-behavior-builder-aero.html?playlistPath=/services/playlist.helpx/products:SG_ADOBEAERO/learn-path:key-techniques/set-header:animation/playlist:topic/en_us.json

https://helpx.adobe.com/aero/how-to/trigger-action-augmented-reality-aero.html?playlistPath=/services/playlist.helpx/products:SG_ADOBEAERO/learn-path:key-techniques/set-header:animation/playlist:topic/en_us.json

ASSIGNMENT 1.2 - Design Development
Fix your design concept and prepare design assets that Adobe Aero can handle, when all media assets are ready, create AR

business card in Adobe Aero.

WEEK 4 10.2.23	Assignment 2 Assignment 1.2 **DUE**	**EXERCISE 4 - SURFACE ANCHOR & ASSETS** https://helpx.adobe.com/aero/how-to/using-scene-anchors.html?playlist=/services/playlist.helpx/products:SG_ADOBEAERO/learn-path:key-techniques/playlist:topic/set-header:guides/en_us.json&ref=helpx.adobe.com https://helpx.adobe.com/aero/how-to/asset-import-aero.html?playlist=/services/playlist.helpx/products:SG_ADOBEAERO/learn-path:key-techniques/playlist:topic/set-header:guides/en_us.json&ref=helpx.adobe.com **OPTIONAL EXERCISE - CHARACTER ANIMATION** https://helpx.adobe.com/adobe-character-animator/how-to/build-animated-face.html?playlist=/services/playlist.helpx/products:SG_CHARACTERANIMATOR/learn-path:get-started/set-header:ccx-designer/playlist:orientation/en_us.json&ref=helpx.adobe.com **STUDIO**
WEEK 5 10.9.23	Assignment 2	**ASSIGNMENT 1.3 - Design Completion** Submit the QR code, 3 different AR Mock-Up images, and 5s capture video in MP4 file.
WEEK 6 10.16.23	Assignment 1.3 **DUE**	**ASSIGNMENT 2 - MAGICAL CHARACTERS** Students will design a AR experience with non-existing creatures in real life such as mythical or fairy tail creatures or characters. Characters can be depicted in 2D or 3D and must carry at least one magic that to be animated in areo. **ASSIGNMENT 2.1 Design Research & Concept** Find out & research your creature. Sketch out full-body character and supporting background objects. Write down 3 different motion or interactivity ideas for your creature and background objects.
WEEK 7 10.23.23	Exercise 3 **DUE** Assignment 2.1 **DUE**	**EXERCISE 3 - CREATING A SIMPLE VIRTUAL GALLERY** https://youtu.be/rNwEFVs4B4Y **ASSIGNMENT 2.2 - Design Development** Create your character/supporting images and required motion element in a relevant Adobe software as assets. You may have to use Adobe Illustrator, Photoshop, Aftereffects, and Chrater Animator when all media assets are ready, create AR creature in Adobe Aero.
WEEK 8 10.30.23	Assignment 2.2 **DUE**	**ASSIGNMENT 2.3 - Design Completion** Submit the QR code, 3 different AR Mock-Up images, and 5s capture video in MP4 file.
WEEK 9 11.6.23	Exercise 4 Assignment	**LECTURE - INTRODUCTION TO VR HEADSET & UNITY** **ASSIGNMENT 3 - BONNARD'S INTERIOR** Students will be introduced to modernist painter Bonnard and

	2.3 **DUE**	his interior paintings. Students will research and choose one of the Bonnard interior paintings or their own paintings, drawings or digital illustration of an interior space and will recreate it as a virtual space and interaction (pop up text, movement, sound, etc).
		READING : https://repository.cardiffmet.ac.uk/bitstream/handle/10369/11194/Pepperell_Slow%20Looking%20at%20Slow%20Art.pdf?sequence=1&isAllowed=n
		LECTURE - Image and Human Interaction
		EXERCISE 4 - GET STARTED WITH PROBUILDER FOR UNITY https://www.youtube.com/watch?v=Ta3HkV_gHTc
		ASSIGNMENT 3.1 - RESEARCH AND PRESENTATION
		Overview & Specifications Introduce one Unity game/art/design contents from website or other online resources. Create a ppt(slide show) to introduce your artist to your classmates (Brief bio, Concept, and example of works:still or video).
WEEK 10 **11.13.23**	Exercise **5** **DUE** Assignment **3.1** **DUE**	**RESENTATION** **EXERCISE 5 - UNITY INTERACTION BASIC** Create a multi-layered AR scene using your own 2D ART (Photo, drawing, paintings, or digital art). **ASSIGNMENT 3.2 VR INTERACTIONSTORYBOARD** Create a storyboard for your VR contents. It should include motion (behavior) and interaction.
WEEK 11 **11.20.23**	Exercise **6** **DUE** Assignment **3.2** **DUE**	**EXERCISE 6 -3D CHARACTER & OBJECT BUILDING CRIT** **ASSIGNMENT 3.3 - Design Development** Prepare scene & objects for scene and interaction in Unity
WEEK 12 **11.27.23**	Assignment **3.3** **DUE**	**ASSIGNMENT 3.4 - Design Completion** Complete the VR project and build a prototype.
WEEK 12 **12.4.23**	Assignement **3.4** **DUE**	**CRIT** **STUDIO**
FINAL **EXAM**	Assigmentt **3.4**	**ASSIGNEMNT 3 SUBMISSION**

12.11.23   **DUE**