ACAD 217 Extended Reality Design
Units: 4
Fall 2023
Tuesdays & Thursdays - 6 to 8.20pm Pacific Time
Location: Iovine & Young Hall, Room 111

Instructor: Carsten Becker
Office: Zoom
Office Hours: As scheduled, or per Individual Request
Contact Info: Preferred communication channel is Slack
DM me in the **iya-becker.slack.com** workspace
For grades-related questions: carstenb@usc.edu
Allow up to 24 hours for replies to emails and messages.

Grader and/or Classroom Assistant/s: TBD
Office Hours (if applicable):
Contact Info:

IT Help:
https://uscedu.sharepoint.com/sites/IYAStudent/SitePages/IT-Resources.aspx
Hours of Service: 9 a.m. – 6 p.m.
Contact Info: iyahelp@usc.edu

*Experience is not what happens to you.
It is what you do with what happens to you.*

- Aldous Huxley

Course Description

In playful discovery, skill-building labs, lectures and project work, students dive into the power of Extended Reality (xR) for designers, technologists and entrepreneurs. A strong focus on innovation in life-enhancing and future-casting applications draws the Iovine and Young perspective of creating in XR with purpose.

Students will gain an expert understanding, inspiration, and the design skills to foray into Augmented (AR), Mixed (MR), or Virtual Reality (VR) to become designers of experiences that engage audiences.

Students build skills in creating experiences through knowledge and practice with XR tools. They will have opportunity to connect with creators and industry guests in the XR space.

Learning Objectives and Outcomes

Understand the potential of Extended Reality (XR) experiences for new ways to experience the world, raise awareness, create, or launch a product or service. See their context within spatial computing and Web3.

Gain an understanding of the cognitive and behavioral processes involved in sensory-spatial experiences. Design with knowledge, empathy, perspective, productivity, health, and journalism as your goals.

Deepen your creative thinking and maker skills in media. Through exposure to the most innovative forms of media and hands-on learning, practice infusing user-centric benefits such as interactivity and perspective-taking into media narratives and experiences.

Study the importance of desirability and viability in existing interactive media formats and conceive future forms of experiences that provide the qualities to become sustainable platforms.

Understand and the iterative process of creative making. Learn to prioritize and improve your time management skills to be efficient and iterate frequently.

Creative Storyteller Skills

1. Build meaningful and innovative interactions for diverse and inclusive audiences.
2. Learn to craft visual assets for XR experiences (3d models, textures, UI elements)
3. Recognize and pursue UX and UI design for XR experiences as a key component.
4. Design in temporal and spatial dimensions.
5. Ability to ideate and successfully communicate *all* aspects of an immersive experiences (goal, audience appeal, feasibility, mechanics, user experience and impact).

Prerequisites:

Prior knowledge of common design, 3D and narrative principles will be applicable in everything you make in this course. Completion of ACAD-187 or self-taught 3D design and/or programming skills will be helpful (but aren't required).

Expectations

To get the most out of this course, a student will…
1. Engage with newly gained insights beyond the classroom. Be actively curious, try out new releases in the extended reality space and share your experience with the group.
2. Follow-up on skill training during class with personal study. Finish work started in the classroom async and share with the instructor even if not prompted.
3. Bring a personal standpoint to your work in the course wherever you can.

What **you** can expect: Lots of new impressions, experiences to try out and build expert opinions on 😉
Also, spending an average of 3 hours outside of class sessions for preparation, self-teaching, assignments, and project work. In weeks before projects are due, this may go up to 7 hours outside of class time. You will never be expected to spend more than 12 hours per week on the course total (in-classroom and async).

**

Highly Recommended Reading

"UX for XR"
by Cornel Hillmann (Apress, 2019) available as download from the USC Library
or as Softcover Book, ISBN 978-1-4842-7019-6 ($37.99 at barnesandnoble.com)

"Experience on Demand" (Research on the cognitive effects and potential of VR)
by Jeremy Bailenson (Norton, 2018) - Paperback, $16.95 at barnesandnoble.com
Available for loan-out at Leavey Library.

Further reading:

"Using Wearable Devices to Participate in 3D Interactive Storytelling"
By Alex Mitchell (Springer International Publishing, 2021)
Available as download from the USC Library

"Designing Interactions for Music and Sound" - Edited by Michael Filmowicz
Available as download from the USC Library

"Sonic Virtuality" by Mark Grisham and Tom Garner (2015)
Available as a download from the USC Library

Required Hardware

- **Laptop Computer** (i7 processor or better) with at least 100GB of free hard disk space on Day 1 of classes
- **External Hard Drive** (minimum 1 TB – about $60 on Amazon)
- **3-Button Mouse with Scroll Wheel** (USB-C mouse - about $15 on Amazon)

In the process of the course, you will also need to…

- install required software on your laptop:

    Lens Studio (free)

    Shapr3d (free with edu license), or another 3d program the student is already proficient in

    Unity (free with edu license)

- install a variety of apps **on your phone** that may require setting up an account. This also requires…

    An iTunes or Google Play account to download free mobile apps

- **1TB of free space** in your USC-managed Google Drive for safely storing your project files

Academy Equipment

We may utilize the Academy's Mixed Reality Lab, sound, video and lighting equipment to create media content, and VR headsets to research, audition and publish VR work. Ask your instructor or the Systems personnel for proper training in the setup and use of the equipment so you can utilize these tools confidently in exercises and projects. Not having spent the proper time to figure out their full use will not be accepted as a valid reason for delays in submitting your assignments.
To check out valuable equipment you may need to acquire certification.
Equipment that is returned late or broken may lead to delays or restrictions in your subsequent check-out.

USC Technology Rental Program

The university realizes that attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program. To apply, please submit an USC Technology Rental Program Application .

**

HOW TO PURCHASE OPTIONAL SOFTWARE AT THE DISCOUNTED ACADEMY:

For classes that require them, the following software are available for purchase **online** through the USC Iovine and Young software catalog at the Academy discounted rate:

Software	IYA Short-Term License at USC Bookstore
Adobe Creative Cloud	$70 2022–2023 annual license
Apple Logic Pro	$35 semester licenses
Apple Final Cut Pro	$35 semester license

To purchase:
- Visit: https://commerce.cashnet.com/IOVINE
- Select the software license(s) you would like to purchase by clicking "View Details" or the software title, and make your purchase
- You will receive an order confirmation receipt at the email address you provided
- You will be notified by email when the software license has been activated

If you have any questions about this process, please do not hesitate to contact Academy IT Support at iyahelp@usc.edu.

Grading Breakdown

	Points	% of Grade
Participation[1]	100	12.5
30-Minutes-or-less Prompts[2]	120	13.5
Ideation Exercises	80	7.5
Quizzes	100	12.5
Projects	400	50
TOTAL	800	100

[1] Attendance + Contributions. Regularly contribute to the discussion in the classroom and in our white-boarding sessions. I encourage students to find their own way of contributing.

Grading Scale (Example)

Course final grades will be determined using the following scale

A   94-100
A-   90-93
B+   87-89
B   83-86
B-   80-82
C+   77-79
C   73-76
C-   70-72
D+   67-69
D   63-66
D-   60-62
F   59 and below

Assignment Submission Policy

All labs, projects and assignments are due at the date and time specified in the syllabus. Projects that are more than 24 hours late will receive a 50% deduction in points. Projects that are more than 7 days late will receive 0 points. Be sure to check Blackboard if you have to miss a class. You are responsible for any materials presented and assignments made even if you are not in class that day.

**

Assessments and Assignments

30-Minutes-or-less Prompts recall or complete material from class. They might be reading or viewing assignments, completing a class exercise, reflection, or a preparation necessary to move ahead. Prompts are <u>always due at the next meeting</u>.

Tests recall concepts paired with technical knowledge that will be critical to apply in your Projects.

Projects require research, self-ideation, creative design, good time management and execution. You may be assigned a role within a team project. How you score in Projects contributes most heavily to your course grade.

Late Submissions

Assignments will be accepted after the deadline with the following grade penalties. Do not ask for extensions; the below are the extensions.

Submission in the 24 hours after the deadline	10% deduction
Submission between 24 and 48 hours after the deadline	20% deduction
Submission between 48 hours and 3 days after the deadline	50% deduction
Submission more than 3 days after the deadline	100% deduction

Keep copies of all your files and emails until the end of the semester.

Extensions

I understand that sometimes, an unexpected life event happens. Each student may ask for an extension on <u>one</u> of their assignments during the term in written form with explanation. The above 'Late Submissions' terms then apply to the extension date given.

Grading Timeline

You will receive your score in prompts, tests, projects, and all graded exercises within two weeks of submission.

Academy Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by ⅓ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential

**

professional or career-related events or opportunities. Additionally, students who need accommodations for religious observations should provide advanced notice to instructors and student athletes should provide Travel Request Letters. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

Spring 2023 addendum:

- Unless students provide an accommodation letter from USC's Office of Student Accessibility Services (OSAS) or a letter from IYA Student Services detailing visa or travel restrictions, attendance and active participation is expected in the classroom. Any student with such accommodations should submit their accommodation document to the instructor as soon as possible to discuss appropriate accommodations. Either classroom recordings or live remote access to the class via Zoom will be provided.
- Students who are experiencing illness should not attend class in person. Please inform the instructor in advance of any class sessions that you can't attend for medical reasons, and accommodations will be arranged to view recorded lectures and submit alternatives to any missed class participation. Students will not be penalized for not attending class in person under these circumstances.
- In the event that you find yourself experiencing COVID-19 related symptoms, in keeping with university recommendations, you should Stay home! This is the best way to prevent spreading COVID-19 as supported by scientific evidence; Please do not come to an in-person class if you are feeling ill, particularly if you are experiencing symptoms of COVID-19.

Iovine and Young Hall Cleanout

The Academy is unable to store student projects and materials beyond the end of the semester. Students must remove all projects and personal materials from the Creators Studio, lockers/locker room, and other classrooms by the end of each semester. **All projects and materials left in Iovine and Young Hall will be discarded two days after final exams end. No exceptions.**

Additional Policies

Should the needs of the class dictate, I reserve the right to modify the class schedule and assignments. Any substantive changes will be announced in class and posted in Blackboard and/or Slack.

Classroom Norms

Students are expected to actively engage with the subjects of the course outside of the classroom. Assigned papers should be informed by research beyond common knowledge. Your solutions to weekly prompts and your course project are expected to be fulfilled from a personal point of engaging your skills, possess thematic merit and relevance to your maker / portfolio goals. Furthermore, instructor expects all students to documenting your own learning process, take an active role in the success of the group through contributing to discussion in the classroom, sharing of ideas, voluntarily providing constructive feedback for your peers, and supporting each other as teammates.

To make the above possible, phones must be put away while in the classroom. Use of laptops is allowed only for tasks relating to our course.

I recommend taking notes by pen in a notebook.

Synchronous session recording notice

I'll do my best to record lecture portions of our meetings. If you have to miss a class due to illness or isolating, you should find slides in Blackboard and you will have access to watch these recordings. But remember you are not permitted to share them with anyone not enrolled in the course.

Course Schedule: Weekly Breakdown

Notes: To accommodate course development and access to equipment, I reserve the right to alter the weekly topics and assignments.

30-Minute… Prompts are always <u>due the following course meeting</u> and are <u>not listed</u> below.

There will be in-class lab time and instructor guidance for all projects, as well as quizzes - not all is listed below.

	Topics	Assignment
Week 1	Course Overview The Big Picture of XR – Makers, Shakers, Audiences	Get your tech ready for the course Start on Lens Studio foundation
Week 2	Mobile AR – engaging in the immediate AR 3.0	App Makeover Ideation Challenge Continue Lens Studio foundation
Week 3	Space, Design, Interaction, Movement How to crit	Create an Introspective Face Lens (Project 1)
Week 4	Use cases of XR: by purpose, by environment, by audience World Space	Read & Reflect on the 'History of XR', book chapters given
Week 5	Sensory Immersions, Perspective-taking UX and UI Design for XR	Sketch a sensory flow for spatial interaction
Week 6	Making/Experiencing Physical Products with XR Basics of 3d Design and Integration	Midterm Plan and create an augmented product experience (Project 2)
Week 7	Primer/Refresher of JavaScript (ES5) AR/VR Game Hour	Project 2 Execution
Week 8 (one session)	KPIs: Planning and measuring successful experiences Evolution of Mixed and Virtual Reality in 2023	Project 2 Execution

**

Week 9	Mixed and Virtual Reality: Complex mapping for moving within stories Designing for collaboration	Complete your Unity setup, assigned tutorials
Week 10	Unity Primer for all – the power of an open development Environment (a look at Genies, Niantic integrations) - Students make a choice for their final project -	Write creative-technical proposal for your Project 3 including spatial design & experience flow
Week 11	Making location meaningful (in Lens Studio or Unity VR*) How to onboard your audience	Story & Asset Design for your Project 3 * attend format-specific labs
Week 12	Guiding vs discovery for agency (in Lens Studio or Unity VR*) Deploying to face-wear	* attend format-specific labs Project 3 Execution
Week 13	Finalizing interaction and reward for audiences	Project 3 Execution
Week 14 (one session)	Sneak peek at building for VisionOS	Project 3 Share-Out: We will be the test audience and provide feedback
Week 15	Reflections Careers in XR Final Presentations	Demonstrate Project 3 final Rehearsals

Note: If progress in group is good, we will have time for Industry guest visits too!
I'll announce dates and company/person during the semester.

Important dates: October 12 – No Class (fall recess)
November 23 – No Class Thanksgiving)
November 30 – Last regular class
December 7, 7pm – FINAL: Project Presentations with process and reflection

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on Research and Scholarship Misconduct.

**

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - *(213) 740-9355 – 24/7 on call*
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - *1 (800) 273-8255 – 24/7 on call*
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services *(RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call*
Studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - *(213) 740-5086*
eeotix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - *(213) 740-5086 or (213) 821-8298*
usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - *(213) 740-0776*
osas.usc.edu
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - *(213) 821-4710*
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - *(213) 740-2101*
diversity.usc.edu

**

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: *(213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC*: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*
dps.usc.edu
Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - *(323) 442-33*40 or otfp@med.usc.edu
chan.usc.edu/otfp
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.