



CTAN502L Experiments in Immersive Design

17961D Spring 2021, 2 units

Instructor : Eric Hanson, hanson@usc.edu

Class meets Tuesdays 9:00-11:50a PST, ONLINE

IT Help: Creative Tech Help Desk, creativetech@sca.usc.edu or 213-821-4571

Course Description:

An in-depth exploration of aesthetics and techniques involved in the conceptualization, design and creation of immersive media and stereoscopic imaging. Review of techniques and aesthetic issues pertinent to immersive virtual reality and stereoscopic animation. Students create short projects utilizing emerging media formats: 3D IMAX cinema, Fulldome cinema, cinematic Virtual Reality.

No pre-requisites, but prior knowledge of Adobe After Effects and Autodesk Maya helpful.

Course Requirements and Grading Breakdown:

Completion of 5 short projects. Unfinished works-in-progress will be considered incomplete. Originality, creativity, and high production quality of project expected. Continual progress will be expected and demonstrated to the instructor weekly.

Stereoscopic Animatic - 15%

How does a cinematic experience alter from possessing depth and volume? Using simple phone apps, we will capture depth-based images and composite them into a stereo 360 degree panorama of the Zemeckis Center's IMAX screen, allowing us to test the creative impact depth can have.

Fulldome Animatic - 15%

Beyond creating depth, how does the cinematic experience broaden when the frame is lost, and full spatiality becomes a canvas? Fulldome cinema is going through a revolution currently, and we will create simple explorations of this medium with photoshop and some specialized spherical painting apps.

Experiments with Spherical Image-Making 15%

Extending the hemisphere of fulldome, we will see how full 360 x 180 space can allow full freedom in interpreting space and temporal events. Choosing either 360 video or artwork created with VR painting and sculpting apps, we will see what challenges exist in creating compelling storytelling in this evolution of film.

Experiments with Reality Capture 15%

So far, virtual reality has been created by simple 360 video or synthetic game-like worlds in realtime. New techniques to capture the real world in full 3d form and light are now available with a minimum of investment. What does truly manipulating reality itself hold for the future of cinema?

Final Project - 25%

The final project is an opportunity for students to synthesize their theoretical and practical learning from the course experiments into a hybrid media project. Students will develop and share their ideas through a written proposal and before undertaking production.

Final exam, multiple-choice: 15%

Attendance:

ATTENDANCE WILL BE TAKEN 10 MINUTES AFTER THE START OF CLASS. Attendance and participation are vital as many weekly assignments will be both introduced and started during the class. You will be marked tardy after ten minutes and absent after 60 minutes. Three or more absences are ground for failing the class. Three tardies equals an absence. If a student is to be absent from a class (barring an emergency) the instructor must be notified prior to the absence via phone or email.

Course Length:

13 weeks, meeting once a week, three hours each class meeting, optional labtime assistance online.

Optional Books:

“3D Storytelling”, Bruce Block, Phillip McNally, Focal Press, 2013 (\$35)

“Exploring 3D: The New Grammar of Stereoscopic Filmmaking”, Adrian Pennington, Focal Press, 2012 (\$30)

“Think in 3D: Food For Thought for Directors, Cinematographers, and Stereographers”, Clyde Dsouza, 2012 (\$22)

“The VES Handbook of Visual Effects”, Jeffery Okun, Susan Zwerman, Focal Press, 2010, (\$60)

Software Used:

Autodesk Maya 2020, Redshift, Adobe Photoshop, AfterEffects/Premiere, Unity

Schedule:

Week 1 Jan 19 CLASS INTRO

Lecture: Intro to class, discussion of project structures and approaches, USC production protocol. Introduction to stereoscopy.

Assignment: Project 1 ideation, acquire VR viewer.

Week 2 Jan 26 FUNDAMENTALS OF STEREO SCOPY

Lecture: Critique of ideation, review of stereoscopy concepts.

Assignment: Shoot stereo image sets on cellphone., storyboard project 1- IMAX cinema.

Week 3 Feb 2 POST-PRODUCTION OF STEREO ANIMATIC, VR HMD BASICS

Lecture: Stereo post-production, compositing in AE, VR HMD setup and use.

Assignment: Composite stereo pairs into IMAX panorama with AE, view in VR.

Week 4 Feb 9 FUNDAMENTALS OF FULLDOME IMMERSIVE CINEMA (STEREO ANIMATIC DUE)

Lecture: Critique and review of stereo IMAX VR, review of fulldome cinema and technique.

Assignment: Create fulldome animatic with PS or Panopainter, review with Amateras.

Week 5 Feb 16 POST-PRODUCTION OF FULLDOME ANIMATIC

Lecture: Review of fulldome production technique, view fulldome films in VR.
Assignment: Continue fulldome work.

Week 6 Feb 23 FUNDAMENTALS OF 360 IMMERSIVE CINEMA (FULLDOME ANIMATIC DUE)

Lecture: Critique of fulldome work, review of rise of spherical 360 cinematic media.
Assignment: View selected VR works.

Week 7 Mar 2 REVIEW OF 360 VIDEO and SPHERICAL ART-MAKING TECHNIQUE

Lecture: Review of latlong format, omnidirectional storytelling and direction.
Assignment: Use of GoPro Fusion video, panoramas, or Quill/Medium painting in VR.

Week 8 Mar 9 REALITY CAPTURE FUTURES (360 ARTWORK DUE)

Lecture: Critique and review 360 projects, introduction to reality capture using photogrammetry technique and tools. Look at selected VR examples.
Assignment: Capture object or location using simple photography, use Meshroom to assemble 3d model.

Week 9 Mar 16 FUNDAMENTALS OF VIRTUAL REALITY (REALITY CAPTURE MODEL DUE)

Lecture: Review of digital tools, technique, pipelines.
Assignment: Project 5 ideation- VR content.

Week 10 Mar 23 INTERACTIVE PRESENCE IN CINEMATIC MEDIA

Lecture: Introduction to Unity for integration of video, 3d photogrammetry, or audio experiences.
Assignment: Begin production of VR project.

Week 11 Mar 30 POST-PRODUCTION OF VIRTUAL REALITY

Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Begin digital production of VR project.

Week 12 Apr 6 POST-PRODUCTION OF VIRTUAL REALITY

Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Continue digital production of VR project.

Week 13 Apr 13 POST-PRODUCTION OF VIRTUAL REALITY

Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Continue digital production of VR project.

Week 14 Apr 20 POST-PRODUCTION OF VIRTUAL REALITY

Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Continue digital production of VR project.

Week 15 April 27 LAST CLASS MEETING, REVIEW

Lecture: Wrap up.

Assignment: Finalize VR short for final submission.

Study Days: Saturday Apr 30- Tues May 4

Tuesday May 11 FINAL EXAM 8a-10a PST, (VR FILM DUE)

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 scientific misconduct, policy.usc.edu/scientific-misconduct.

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.

Student Health Leave Coordinator – 213-821-4710

Located in the USC Support and Advocacy office, the Health Leave Coordinator processes requests for health leaves of absence and advocates for students taking such leaves when needed.

<https://policy.usc.edu/student-health-leave-absence/>

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 and 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 of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.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. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also

prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

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 of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support & 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 at USC - (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) 442-1200 – 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.

PLEASE NOTE:

**FOOD AND DRINKS (OTHER THAN WATER) ARE NOT PERMITTED IN ANY INSTRUCTIONAL SPACE
IN THE SCHOOL OF CINEMATIC ARTS COMPLEX**