CTAN502L Experiments in Immersive Design
17961D Spring 2020, 2 units

Instructor :   Eric Hanson, hanson@usc.edu
Class meets Tuesdays 9:00-11:50a, RZC117
Lab meets Thurdays 9:00-11:50a, RZC117
Office hours Tuesdays 1:00-4:00p and Wednesdays 1:00-4:00p, SCB 210P

Student Assistant: TBD

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 Grades:

- Completion of 2 projects: (1) 15 second short in stereoscopic timelapse format [30%], (1) VR short film, 30-60 secs, in media to be discussed [40%}. Unfinished works-in-progress will be considered incomplete. Originality, creativity, and high production quality of project expected.

- Final exam, multiple-choice, from lecture notes: [30%]

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:

15 weeks, meeting once a week, three hours each class meeting, optional 3 hr lab.

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)

Syllabus:

Week 1 Jan 14 **CLASS INTRO**
Lecture: Intro to class, discussion of project structure and approaches, USC production protocol. Introduction to stereoscopy.
Assignment: Project 1 ideation, shoot stereo image set on cellphone.

- Review of class and project structure
- History of stereoscopy
- Extending storytelling opportunities in stereo
- Pitfalls in use of stereo
- Examples/ breakdowns

Week 2 Jan 21 **FUNDAMENTALS OF STEREOSCOPY**
Lecture: Critique of ideation, review of stereoscopy concepts.
Assignment: Storyboard project 1- IMAX cinema.

- Interocular distance
- Zero parallax plane
- Depth budget
- Viewing methods
- Software demonstrations

Week 3   Jan 28 **SHOOTING FOR STEREO TIMELAPSE**
Lecture: Review of digital tools, technique, pipelines.
Assignment: Begin shooting.

- Timelapse, stereo overview
- Lensing concerns
- Review of cameras utilized
- Stereo previewing in field
- DSLR timelapse review

Week 4   Feb 4 **POST-PRODUCTION OF STEREO TIMELAPSE**
Lecture: Review of digital tools, technique, pipelines.
Assignment: Post-production work on timelapse.

- Raw conversion using Bridge
- Digital file formats
- Stereo adjustment with Stereo PhotoMaker
- Stereo previewing tools
- Conforming and finishing in AfterEffects

FIELD TRIP (OPTIONAL) Sat Feb 8th

Week 5   Feb 11 **FUNDAMENTALS OF GIANT SCREEN PRODUCTION (Meet in SCA IMAX)**
Lecture: Review of digital tools, technique, pipelines
Assignment: Shooting Tests.

- Introduction to SCA IMAX theatre
- Large screen differences from cinema
- Film vs digital shift in giant screen
- Production demands of giant screen

- Screening of Imax clips

Week 6   Feb 18   **POST-PRODUCTION OF STEREO TIMELAPSE** Lecture:
Assignment: Post-production work on timelapse.

- Continue production of timelapse post

Week 7   Feb 25   **TIMELAPSE DEADLINE + REVIEW (Meet in SCA IMAX), FUNDAMENTALS OF FULL-DOME CINEMA**
Lecture: review of completed shorts, intro to fulldome

- Introduction to Vortex Immersion theatre
- Fulldome differences from flat cinema
- Principles of immersion
- Review of theatre installations, dome culture
- Previewing tools

Week 8   Mar 3   **POST-PRODUCTION OF FULLDOME CINEMA**
Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Begin shooting and/ or production.

- Fulldome differences from post in cinema
- Digital file formats
- Software review
- Stereo previewing tools
- Conforming and finishing

Week 9   Mar 10   **FUNDAMENTALS OF VIRTUAL REALITY**
Lecture: Review of digital tools, technique, pipelines.
Assignment: Project 3 ideation- VR content.

- Introduction to VR
- VR differences from flat cinema
- Principles of immersive storytelling
- Review of HMD hardware, VR culture

SPRING BREAK Mar 16-20- NO CLASS

Week 10   Mar 24   **SHOOTING FOR VIRTUAL REALITY**
Lecture: Review of digital tools, technique, pipelines.
Assignment: Storyboard project 3- VR.

- VR shooting differences from cinema
- CGI vs live-action limitations
- Review of cameras, software utilized

- Stereo challenges

Week 11   Mar 31 **POST-PRODUCTION OF VIRTUAL REALITY**
Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Begin digital production of VR project.

- VR post-production differences from cinema
- Review of authoring applications
- Review of cameras utilized

Week 12   Apr 7 **POST-PRODUCTION OF VIRTUAL REALITY**
Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Continue digital production of VR project.

- Assisting students in production

Week 13   Apr 14 **POST-PRODUCTION OF VIRTUAL REALITY**
Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Continue digital production of VR project.

- Assisting students in production

Week 14   Apr 21 **POST-PRODUCTION OF VIRTUAL REALITY**
Lecture: Review of digital tools, technique, pipelines, assist students.
Assignment: Continue digital production of VR project.

- Assisting students in production

Week 15   Apr 28   **LAST CLASS MEETING, REVIEW**
Lecture: Wrap up.
Assignment: Finalize VR short for final submission.

- Review, critique of finished VR content
- Future directions for immersive media

Study Days: Saturday May 2- Tues May 5

Tues May 12th **FINAL EXAM 8-10am, VR SHORT DEADLINE**

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:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.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 Services (RSVP) - (213) 740-4900 – 24/7 on call
engemannshc.usc.edu/rsvp
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu
Information about how to get help or help a survivor of 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.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support
Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation 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 Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa
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) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

Diversity and Inclusion
Diversity and Inclusion are foundational to the SCA community. We are committed to fostering a welcoming and supportive environment where students of all identities and backgrounds can flourish. The classroom should be a space for open discussion of ideas and self- expression; however, SCA will not tolerate verbal or written abuse, threats, harassment, intimidation or violence against person or property. If students are concerned about these matters in the classroom setting they are encouraged to contact their SCA Diversity and Inclusion Liaison, http://cinema.usc.edu/about/diversity.cfm; e-mail diversity@cinema.usc.edu. You can also report discrimination based on a protected class here https://equity.usc.edu/harassment-or-discrimination/

Disruptive Student Behavior:
Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.

PLEASE NOTE:
FOOD AND DRINKS (OTHER THAN WATER) ARE NOT PERMITTED IN ANY INSTRUCTIONAL SPACES IN THE CINEMATIC ARTS COMPLEX