CTAN504L Creative Production in Virtual Reality
17990D Spring 2019, 2 units
Pre-Req CTAN-502L

Instructor: Eric Hanson, hanson@usc.edu
Class meets Wednesdays 9-11:50a RZC117
Lab meets Thursdays 4-6:50p RZC117
Office hours Tuesdays 1-4p and Wednesdays 1-4p, SCB 210P

Student Assistant: TBD

Course Description:
A creative VR studio course exploring the intersection of linear cinematic film and realtime immersive experience. Techniques employed will cover live-action capture with the Jaunt VR camera, animated graphic work utilizing Autodesk Maya, and realtime immersive narrative utilizing Unity and tethered headset. Projects will be done in team format. Intent of the class is to advance the art and creative expression in the emerging field of virtual reality.

Prior knowledge of Adobe After Effects, Autodesk Maya, and Unity helpful for preparation.

Course Requirements and Grades:
- Completion of 2 projects:
  1. Completed 2 minute linear cinematic VR film, [30%]
  2. Interactive roomscale media experience with integration of elements of linear film, [40%].

Unfinished works-in-progress will be considered incomplete. Originality, creativity, and quality of project expected.

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

Course Length:
15 weeks, meeting once a week, three hours each class meeting and three hours lab.

Books Recommended:
“The Filmmaker’s Eye: Learning Cinematic Composition”, Gustavo Mercado, Focal Press, 2010
“3D Storytelling”, Bruce Block, Phillip McNally, Focal Press, 2013

Syllabus:
Week 1  Jan 9  CLASS INTRO
Lecture: Intro to class, discussion of project structure and approaches, USC production protocol. Introduction to current state of virtual reality field.
Lab Assignment: Project ideation, gestalt images.
• Review of class and project structure
• History of immersion and virtual reality
• Current expansion of field
• Storytelling opportunities per media
• Examples/ breakdowns

Week 2  Jan 16  FUNDAMENTALS OF IMMERSIVE MEDIA
Lecture: Review of imagery, key concepts of immersion.
Lab Assignment: Project ideation.

• Physiology of immersion
• Agency versus passivity
• Methods of immersion
• Methods of interaction
• Future trends

FIELD TRIP (OPTIONAL)  Sun Jan 20

Week 3  Jan 23  NARRATIVE IN CINEMATIC VIRTUAL REALITY
Lecture: Review of cinematic storytelling.
Lab Assignment: Create storyboard.

• Traditional linear storytelling structures
• Branching story
• Directed story
• Participant or observer
• Finding balance

Week 4  Jan 30  CINEMATIC VIRTUAL REALITY PRODUCTION
Lecture: Review of digital tools, technique, pipelines.
Lab Assignment: Begin shooting.

• Differences from conventional live action
• Impact on talent, crew
• Team structure, roles
• Digital tools in production, post, and distribution
• Production pipelines

FIELD TRIP (OPTIONAL)  Sat Feb 2

Week 5  Feb 6  SHOOTING FOR CINEMATIC VIRTUAL REALITY
Lecture: Review of cameras, support, post processing.
Lab Assignment: Post-production of sample shot.

• Cameras for VR
• Digital file formats
• Software review
• Stereo previewing tools
• Conforming and finishing

Week 6  Feb 13  ANIMATION AND CGI FOR VIRTUAL REALITY
Lecture: Review of completed shot, animation methods.
Lab Assignment: Test shot using Adobe AfterEffects and Mettle Skybox.

• Review, critique of finished test shots
• Methods of assembled shot construction
• Autodesk Maya and 3d animation
• Panoramic imagery
• Use of Adobe AfterEffects and Mettle Skybox

Week 7  Feb 20  POST-PRODUCTION OF CINEMATIC VIRTUAL REALITY
Lecture: Introduction to editing and audio for VR.
Lab Assignment: Create test edit of sample footage.

• Editorial differences in creativity
• Technical editorial differences
• Use of Adobe Premiere VR toolset
• VR players and headset review
• Ambisonic audio capture

Week 8  Feb 27  FUNDAMENTALS OF REALTIME MEDIA
First project, 2min cinematic film due.
Lecture: Review of digital tools, technique, pipelines.
Lab Assignment: Ideation of realtime project.

• Realtime versus cinematic VR
• Realtime engine tech review
• Roomscale experiences
• Review of user interaction
• Use of photogrametry

Week 9  Mar 6  MODELING FOR REALTIME MEDIA
Lecture: Review of ideation.
Lab Assignment: Creation of basic modeling.

• Review of modeling options for Unity engine
• Basic Autodesk Maya
• Pre-built model options
• Optimization technique

SPRING BREAK Mar 10-17- NO CLASS
Week 10  Mar 20  **INTERACTION AND UI FOR REALTIME MEDIA**  
Lecture: Review of modeling.  
*Lab Assignment: Add interaction to modeling.*  
- Review of user interface issues  
- Use of graphics  
- Interaction versus narrative  
- Review of controller options

Week 11  Mar 26  **AUTHORING FOR REALTIME MEDIA**  
Lecture: Review of UI and interaction.  
*Lab Assignment: Compile for various output.*  
- Review of output options  
- Dependency issues  
- Distribution and platforms

Week 12  Apr 3  **PRODUCTION OF FINAL PROJECT**  
Lecture: Review of output, assist students.  
*Lab Assignment: Continue final digital production of project.*  
- Assist students with individual projects

Week 13  Apr 10  **PRODUCTION OF FINAL PROJECT**  
Lecture: Review of progress, assist students.  
*Lab Assignment: Continue final digital production of project.*  
- Guest speaker  
- Assist students with individual projects

Week 14  Apr 17  **PRODUCTION OF FINAL PROJECT**  
Lecture: Review of progress, assist students.  
*Lab Assignment: Continue final digital production of project.*  
- Assist students with individual projects

Week 15  April 24  **LAST CLASS MEETING, REVIEW**  
Lecture: Wrap up, guest speaker.  
*Lab Assignment: Finalize final digital production of project.*  
- Review, critique of finished VR content  
- Future directions for immersive media

*Study Days: Saturday Apr 27-30*

*Finals Week: FINAL EXAM  Wednesday May 1, 2-4pm, FINAL PROJECT 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:

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-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.
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