CTAN504L Creative Production in Virtual Reality
Fall 2017, 2 units
Pre-req CTAN-502L

Instructor: Eric Hanson, hanson@usc.edu
                         Class meets Tuesdays 1-3:50p RZC117
                         Lab meets Fridays 10-12:50p RZC117
                         Office hours Tuesdays 9-noon & 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

"Exploring 3D: The New Grammar of Stereoscopic Filmmaking", Adrian Pennington, Focal Press, 2012

"3D Storytelling", Bruce Block, Phillip McNally, Focal Press, 2013

"The VES Handbook of Visual Effects", Jeffery Okun, Susan Zwerman, Focal Press, 2010

Syllabus:

Week 1 Aug 22 **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 Aug 29 **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

Week 3 Sept 5 **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 Sept 12 **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/Sun Sept 16-17

Week 5 Sept 19 **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   Sept 26   **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   Oct 3   **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   Oct 10   **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   Oct 17   **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

Week 10   Oct 24   **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   Oct 31 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   Nov 7 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   Nov 14 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   Nov 21 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   Nov 28 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 Dec 2 – Tuesday, Dec 5

Finals Week: **FINAL EXAM Thurs Dec 11, 11-1p**, **FINAL PROJECT DUE (INTERACTIVE)**

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" https://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, http://policy.usc.edu/scientific-misconduct.

Support Systems:
Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. https://engemannshc.usc.edu/rsvp/

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. https://equity.usc.edu/

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. https://studentaffairs.usc.edu/bias-assessment-response-support/

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. http://dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. https://diversity.usc.edu/

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, http://emergency.usc.edu

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.
Provides overall safety to USC community. http://dps.usc.edu

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