

CTAN599 Special Topics: Creative Production in Virtual Reality

17989R Spring 2017, 2 units

Instructor: Eric Hanson, hanson@usc.edu
Class meets Wednesdays 9-11:50a SCB102
Lab meets Thursdays 4-6:50p SCB102
Office hours Wednesdays and Thursdays 1-4p, SCB 210P

Student Assistant: Joe Stucky, jstucky@usc.edu

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 opportunities 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.

No pre-requisites, but completion of CTAN502 or prior knowledge of Adobe AfterEffects, 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.

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 Jan 11 CLASS INTRO

Lecture: Intro to class, discussion of project structure and approaches, USC production protocol. Introduction to current state of virtual reality field.

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 18 **FUNDAMENTALS OF IMMERSIVE MEDIA**

Lecture: Review of imagery, key concepts of immersion.

Assignment: Project ideation.

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

Week 3 Jan 25 **NARRATIVE IN CINEMATIC VIRTUAL REALITY**

Lecture: Review of cinematic storytelling.

Assignment: Create storyboard.

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

Week 4 Feb 1 **CINEMATIC VIRTUAL REALITY PRODUCTION**

Lecture: Review of digital tools, technique, pipelines.

Assignment: Begin shooting.

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

Week 5 Feb 8 **SHOOTING FOR CINEMATIC VIRTUAL REALITY**

Lecture: Review of cameras, support, post processing.

Assignment: Post-production of sample shot.

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

Week 6 Feb 15 **ANIMATION AND CGI FOR VIRTUAL REALITY**

Lecture: Review of completed shot, animation methods.

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 22 **POST-PRODUCTION OF CINEMATIC VIRTUAL REALITY**

Lecture: Introduction to editing and audio for VR.

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 Mar 1 **FUNDAMENTALS OF REALTIME MEDIA**

First project, 2min cinematic film due.

Lecture: Review of digital tools, technique, pipelines.

Assignment: Ideation of realtime project.

- Realtime versus cinematic VR
- Realtime engine tech review
- Roomscale experiences
- Review of user interaction
- Use of photogrammetry

Week 9 Mar 8 **MODELING FOR REALTIME MEDIA**

Lecture: Review of ideation.

Assignment: Creation of basic modeling.

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

Mar 14 **NO CLASS- SPRING BREAK**

Week 10 Mar 22 **INTERACTION AND UI FOR REALTIME MEDIA**

Lecture: Review of modeling.

Assignment: Add interaction to modeling.

- Review of user interface issues

- Use of graphics
- Interaction versus narrative
- Review of controller options

Week 11 Mar 29 AUTHORIZING FOR REALTIME MEDIA

Lecture: Review of UI and interaction.

Assignment: Compile for various output.

- Review of output options
- Dependency issues
- Distribution and platforms

Week 12 Apr 5 PRODUCTION OF FINAL PROJECT

Lecture: Review of output, assist students.

Assignment: Continue final digital production of project.

- Assist students with individual projects

Week 13 Apr 12 PRODUCTION OF FINAL PROJECT

Lecture: Review of progress, assist students.

Assignment: Continue final digital production of project.

- Guest speaker
- Assist students with individual projects

Week 14 Apr 19 PRODUCTION OF FINAL PROJECT

Lecture: Review of progress, assist students.

Assignment: Continue final digital production of project.

- Assist students with individual projects

Week 15 Apr 26 LAST CLASS MEETING, REVIEW

Lecture: Wrap up, guest speaker.

Assignment: Finalize final digital production of project.

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

Study Days: Saturday April 29 – Tuesday, May 2

Fri May 5 FINAL EXAM 8-10a

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 Section 11, *Behavior Violating University Standards*<https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. 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/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity*<http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men*<http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute*<http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs*http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

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