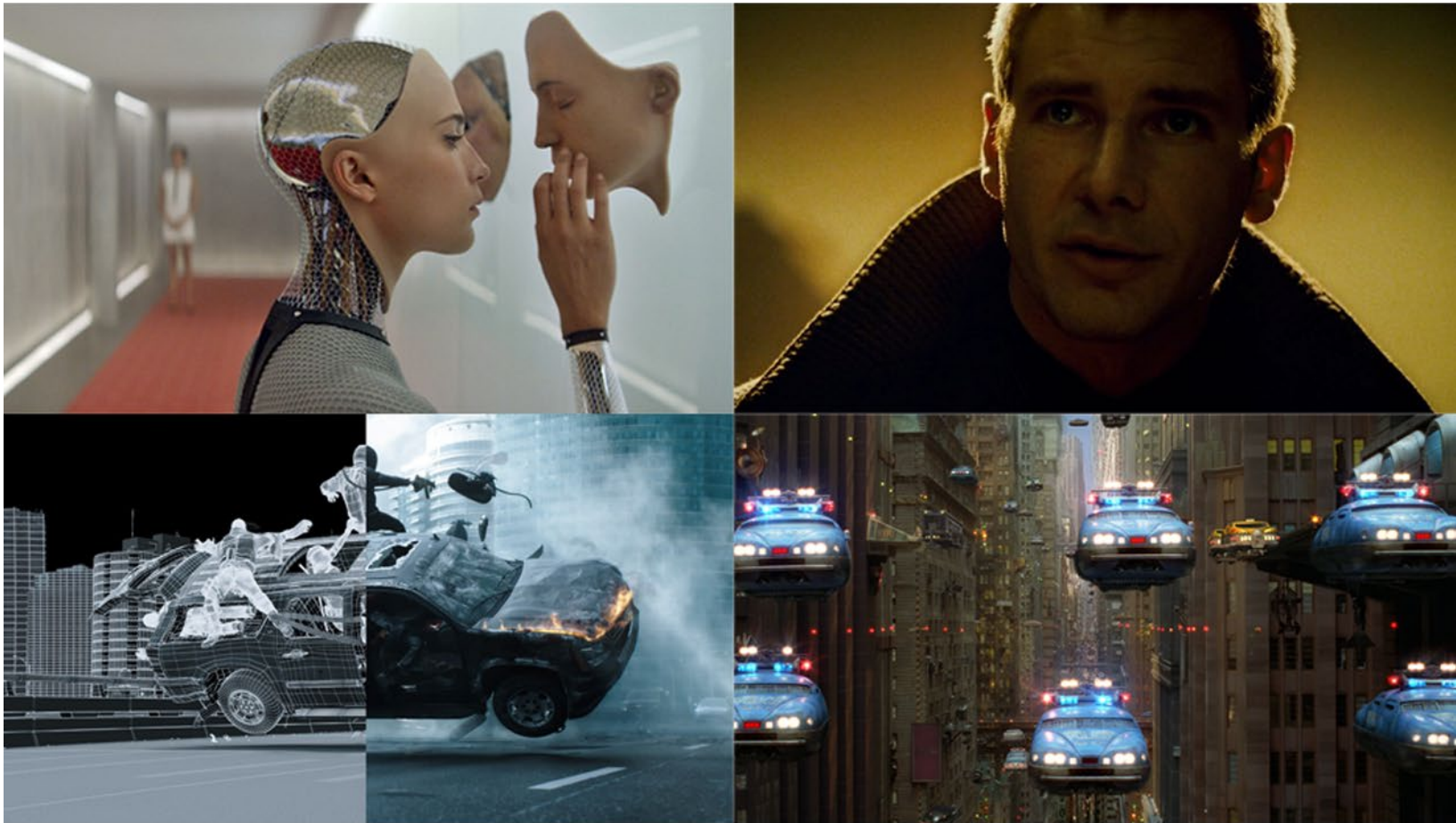
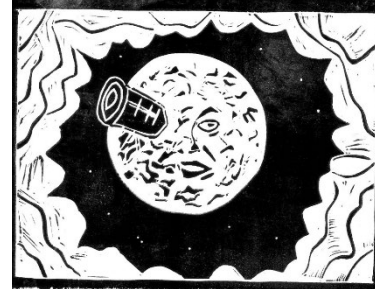


CTAN462 Visual Effects Creation



Learn the essential techniques and software used in the creation of contemporary visual effects in cinema, from its physical origins to modern day digital methodologies. Gain basic skills in Maya, Redshift, Substance, SynthEyes, and Nuke. Surveys the current transition to realtime workflows in virtual production.



CTAN 462 Visual Effects Creation

17900D Fall 2025, 2 units

Instructor: Eric Hanson, hanson@usc.edu
Class meets Wednesdays 9-11:50a PST

Course Description:

This course will survey contemporary concepts and approaches to production in the current state of film and video effects work. Digital and traditional methodologies will be covered, with a concentration on digital exercises illustrating modern technique. AI may be used as reference or inspiration for your work but we do not accept AI-generated art as your own original work as it is deemed derivative of other works whose originators may not have granted permission for its use. The class is taught by Eric Hanson, a visual effects designer specializing in the creation of digital environments for VR and feature film. Having worked with leading visual effects houses such as Digital Domain, Sony Imageworks, Dream Quest Images, and Walt Disney Feature Animation, his work can be seen in "The Day After Tomorrow", "Cast Away", "Mission to Mars", "Fantasia 2000", and "The Fifth Element", among others.

Office Hours: Online, please schedule at www.calendly.com/hansonusc

Teaching Assistant: TBD

Equipment Check-out: Rachel Levine, rlevine@cinema.usc.edu

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

THIS IS AN IN-PERSON CLASS

In accordance with university recommendations, all meetings of this class will be held in person. Students who become ill and need to self-isolate will be supported in their efforts to stay current with classwork and assignments, to the extent possible. Please contact Professor Hanson and your SA, at least one hour prior to class start time if you become ill and need to self-isolate. Do not come to class if you are experiencing any symptoms of COVID-19 or other illnesses. Requests for longer term exemptions will be considered on a case-by-case basis, and must be supported by a written from the USC Office of Student Accessibility Services (OSAS).

Course Length:

15 weeks, meeting once a week.

Optional Books:

"The VES Handbook of Visual Effects" (2nd edition), Susan Zwerman et al, Routledge, (\$41.00)

"The Visual Effects Producer", Charles Finance/ Susan Zwerman, Focal Press, (\$32)

"Special Effects: The History and Technique" (2nd edition), Richard Rickitt, Billboard Books, 2007. (\$69.00)

"Maya 6 Killer Tips", Eric Hanson, New Riders 2004. (\$26.00)

"Introducing Autodesk Maya 2016", Dariush Derakhshani, 2015. (\$35.00)

"Digital Lighting and Rendering", Jeremy Birn, New Riders 2000. (\$52.00)
"Light- Science and Magic", Fil Hunter, Focal Press, 2007. (\$32.00)
"Digital Compositing for Film and Video", Steve Wright, Focal Press, 2017. (\$58.00)
"The ASC Treasury of Visual Effects", Dunn and Turner, ASC, 1983. (out of print?)
"The Invisible Art: The Legends of Movie Matte Painting". Craig Barron, Chronicle Books, 2002.
"Filming the Fantastic, a Guide to VFX Cinematography", Mark Sawicki, Focal Press, 2007. (\$45.00)
"The Visual Story", Bruce Block, Focal Press, 2001. (\$25.00)
"Digital Domain, The Leading Edge of Visual Effects", Piers Bizony, Billboard Books, 2001, (\$50.00)

Software Used:

Autodesk Maya 2024, Redshift, SynthEyes, Foundry Nuke, Adobe Photoshop

Grading Breakdown:

70%: Class Project:

(10%) Shoot BG plate, Camera Tracking - Due Week 5/Sept 25
(20%) 3D Modeling - Due Week 7/Oct 9
(20%) Animating, Texturing, and Lighting - Due Week 10/Oct 29
(20%) Rendering, Rotoscoping and Final Compositing - Due on Final Exam/Dec 16

30%- Final Exam- Dec 16

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 grounds for **FAILING** the class. Three tardies equals an absence. If a student is to be absent from a class (barring an emergency) the instructor and SA must be **NOTIFIED** prior to the absence via phone or email. No portion of the grade may be awarded for class attendance, but non-attendance can be the basis for lowering the grade, when clearly stated on the syllabus. Attendance policies may address student athletes with approved Travel Request Letters and students who give advance notice of religious observation.

Schedule:

Week 1, Aug 27: **HISTORY AND ORIGINS OF SPECIAL EFFECTS IN FILM**

Last 100 Years
Melies, Griffith
Case Studies:
Metropolis
Just Imagine
Things To Come
Ray Harryhausen
50's and 60's
2001
Star Wars/ Lucas/ ILM
Blade Runner
Fifth Element
Gladiator

The Phantom Menace
Present Day

Optional Reading Assignment: "Special Effects", pg 8-47.
"ASC Treasury of Visual Effects", pg 15-82.

Week 2, Sept 3: **PRACTICAL METHODOLOGIES TO PRESENT DIGITAL**

Historic Effects Practices:
In-Camera Technique
Use of Mirrors and Projections
Use of Miniatures, Static and Action
Use of Stagecraft, Sets and Cameras
Matte Painting
Extractive Screens
Optical Printing Precedence
Motion Control
Pyrotechnics and Explosions
Modern Digital Workflow
Virtual Production
Modern Effects Facility
Integration w/ The Film Process
EFX Facility Staff Structure
Chain of Command/ Roles
EFX Production Software
EFX Facility Components
Production Pipeline Diagrams
Gamma Pipeline
Effects Work Scheduling

Optional Reading Assignment: "Special Effects", pg 38-89, 114-153, 244-265, 306-337.
"Creating Special Effects For TV and Video", pg 26-31, 48-69, 102-125, 148-159.
"ASC Treasury of Visual Effects", pg 91-115, 167-174, 211- 220, 265-282.

Week 3, Sept 10: **2D DIGITAL METHODOLOGIES- COMPOSITING & ROTOSCOPING**

EXERCISE: Roto Background Plate (Nuke)
Class Project Introduced
Review of Nuke
Roto Matte Extraction
Hands On Session

Week 4, Sept 17: **3D CAMERA TRACKING- MATCHMOVING**

EXERCISE: Track Background Plate (SynthEyes)

Basic Principles, Workflow
Survey Packages
Stage Issues
Lens Distortion Review
Review of SynthEyes
Hands On Session

Week 5, Sept 24: **INTRODUCTION TO 3D CGI**

EXERCISE: Model UFO for Scene (Maya)

***WORK DUE:** BG plate shot, conformed, and tracked.

Basic Principles, Workflow

Survey of Packages

3D Modeling Basics

Hands On Session

Week 6, Oct 1: **3D MODELING TECHNIQUE**

EXERCISE: Continue UFO Model (Maya)

Modeling Efficiency

Use of 2D Cards

Poly vs Nurbs

Proper Modeling Methodology

Character vs Hard Models

Hands On Session

Week 7, Oct 8 **(MID-TERM): CGI LIGHTING TECHNIQUE**

EXERCISE: Light UFO (Maya)

***WORK DUE:** Modeling of Saucer

Review of Classic Cinematic Lighting

Review of CG Methods

Exterior vs Interior Methods

Current vs Future Directions

Direct vs Global Methods

Simulating Optical Effects

Incandescence Mapping

Case Study: Fifth Element

Hands On Session

Oct 9-10 Fall Recess

Week 8, Oct 15: **CGI TEXTURING/ SHADING**

EXERCISE: Paint and Apply Texture Maps for UFO (Photoshop, Maya)

Shading Models

Procedural vs 2d Mapping

Review of Rendering Applications

Photoshop Techniques

Shader Network Basics

Importance of Specular Mapping

TriPlanar Projections

Weathering Surfaces

Future Directions

Texture Painting Review

Hands On Session

Week 9, Oct 22: **CGI ANIMATION**

EXERCISE: Animate UFOs, Dust Effect in Scene (Maya)

Review of Methods

Character vs Effects Animation
Keyframe vs Procedural Techniques
Dynamic Simulations
Particle Effects
Hands On Session

Week 10, Oct 29: **CGI CAMERAWORK**

EXERCISE: Render Scene Frames (Maya)
***WORK DUE:** Animation, Texturing, Lighting

Visual Composition
Vanishing Points
Natural Movement
Proper Camera Setup
Motion Control Rigs
Camera Projection
Hands On Session

Week 11, Nov 5: **INTRODUCTION TO 2D COMPOSITING**

EXERCISE: Composite UFO into Scene (Nuke)

Survey of Operations
Pulling Mattes
2D Tracking
Formats

Week 12, Nov 12: **INTERMEDIATE 2D COMPOSITING**

EXERCISE: Composite UFO into Scene (Nuke)

Color Space
Image Manipulation
Handling Disparate Elements
Hands On Session

Week 13 Nov 19 **PRODUCTION ROUNDS OF FINAL PROJECT**

EXERCISE: Continue production of final shots.

Week 14 Nov 26 **PRODUCTION ROUNDS OF FINAL PROJECT**

EXERCISE: Continue production of final shots.

Week 15, Dec 3: **LAST CLASS MEETING, PROJECT WRAP UP**

EXERCISE: Finalize Compositing

Study Days: Sat Dec 6- Tues Dec 9

TBD: FINAL EXAM, FINAL VFX PROJECT DUE

Dec 18-Jan 11, 2025 Winter Recess

The School of Cinematic Arts Support Systems and Statements

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 persons 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 or anonymously submit a report on SCA Community: <https://scacommunity.usc.edu/secure/diversityEquity/> You can also read more about how to report discrimination based on a protected class here: <https://eetox.usc.edu/get-help/what-are-my-choices-text/>

SCA Office of Student Services

213-740-8358 or StudentAffairs@cinema.usc.edu

SCA Embedded Therapists

Students enrolled in an SCA major program can schedule an appointment with an embedded therapist for the School of Cinematic Arts through the student health portal [MySHR](#).

SCA Community

For additional SCA resources please visit scacommunity.usc.edu

[Creative Technology and Support](#)

(213) 821-4571

creativetech@cinema.usc.edu

Location: SCA 128

Support Hours: Monday - Friday, 8:30 AM - 8:30 PM

<https://knowledgebase.sca.usc.edu/>

<https://workstations.sca.usc.edu/>

Physical Production Office

The Physical Production Office assists students and faculty with production-related matters including production numbers, locations, permits, insurance, gear and equipment vendors, safety issues, and crew and actor policies. More information can be found by visiting the online [Production Procedures and Safety Handbook](#). The Physical Production Office is located at SCA 304 and is open every weekday from 9am-5pm (Fridays 9am-1pm). You can also reach the Office by calling 213-740-1298 or by email at spo@cinema.usc.edu.

Office of Industry Relations

School of Cinematic Arts - SCA 235

(213) 740-4432

ir@cinema.usc.edu

Cinematic Arts Library Research Guide

<https://libguides.usc.edu/cinema>

Statement on Academic Conduct and Support  Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, compromises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodation is not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

COVID-19 Resource Center - <https://coronavirus.usc.edu/what-should-i-do/>

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

988 Suicide and Crisis Lifeline - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis

services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086
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.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101
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
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
Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
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.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.

PLEASE NOTE:

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

Land Acknowledgement

USC acknowledges that we are on the traditional land of the Tongva People. For thousands of years, the Tongva people lived on this land we occupy today and were considered the most powerful indigenous peoples to inhabit the Los Angeles basin. Along with the Tongva, we also recognize the Chumash, Tataviam, Serrano, Cahuilla, Juaneño, and Luiseño People, for the land that USC also occupies around Southern California. To learn about the Indigenous land on which your learning location resides, please visit [Native-Land.ca](https://www.native-land.ca) to discover the Original People of your home.