

CTAN-432 The World of Visual Effects

Spring Semester 2025 Syllabus

Note: Check back for updates.

Thurs 4:30 PM – 7:20 PM.

SCB 104

Units: 2

Craig Barron

craigbar@usc.edu

Office Hours: Wed 7:45am to 9:45am.

Friday 7:45am to 9:45am by appt.

Offices: TBD

SA: TBD

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 to discover the Original People of your home.

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 Prof. Craig Barron and your SA at least one hour before 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.

Timely attendance is mandatory and failure to attend all class sections from beginning to end may affect grades.

- Exemptions will be allowed on a case-by-case basis and must be supported by a written accommodation request from the USC Office of Student Accessibility Services (OSAS).
- Students who become ill and need to self-isolate will be supported in their efforts to stay current with classwork and assignments.

Students must contact the professor or SA 24 hours before class start time if they need to miss class for any reason.

CTAN-432: The World of Visual Effects

This course explores the artistry and traditions of cinematic visual effects (VFX), emphasizing the essential role of illusion in storytelling throughout film history. Students will examine the creative VFX problem-solving process that remains vital to contemporary cinema. The course traces VFX evolution from the earliest motion pictures of Georges Méliès (who pioneered storytelling in film) through early Hollywood's "trick shot" artists to today's digital wizards who create modern blockbuster spectacles. Through analysis of specific shots, scenes, and complete films, students will study both technical execution and dramatic impact.

During in-class screenings, students will present their theories on how various film illusions were achieved and evaluate their effectiveness in enhancing the narrative. The course provides insights into creating these sequences and examines the reasoning behind specific technical choices. Weekly readings and viewing assignments will form the basis for classroom discussions.

Students will complete two homework assignments requiring them to extract and edit visual effects shots from films of their choice using iMovie or similar video editing software. The instructor and student assistant (SA) will provide technical support if needed.

The course emphasizes how visual effects are fundamentally connected to film's mysterious power to mesmerize audiences. Class discussions build toward a final examination, during which students analyze assigned films, addressing technical execution and dramatic implementation of visual effects. By the end of the course, students will have a solid foundation in VFX mechanics and understand its crucial role in cinematic storytelling.

The class schedule below outlines specific topics and activities. Guest lectures by entertainment industry professionals may be included to share real-world insights. Some content in the syllabus may be adjusted or condensed based on time constraints, emerging technologies, guest speaker availability, or other factors that could enhance the learning experience. Any significant changes to the course schedule or content will be announced in class and posted on Blackboard with adequate notice to allow students to prepare accordingly.

Course materials will be posted to Blackboard following each session, allowing students to focus on lectures rather than extensive note-taking. The midterm and final examinations mainly consist of multiple-choice questions based on these materials. The tests assess understanding of visual effects concepts and are administered in a closed-book, closed-notes format without computer access.

Your Final Grade is Based On:

Regular attendance and preparation, thorough completion of readings/viewings, engaged class participation, and thoughtful written work.

Class Participation –15%
Homework – 35%
Midterm – 25%
Final Exam – 25%

Letter Grade & Percentage Range:

A	100% to 94%	C	76% to 73%
A-	93% to 90%	C-	72% to 70%
B+	89% to 87%	D+	69% to 67%
B	86% to 83%	D	66% to 63%
B-	82% to 80%	D-	62% to 60%
C+	79% to 77%	F	59% to 0%

Missing homework or assigned projects will only be excused with documented medical or personal emergencies. A late assignment may not be accepted.

Course Outline:

***Jan. 16, Class – 1, VFX Pioneers, Introduction of VFX Techniques. Machine Age technology that would power the cinematic art form for nearly a century.**

- Professor’s background as a film historian and career highlights in VFX.
- Genesis: Early methods and creators of cinematic illusions.
- Illusionist, Georges Méliès.
- Variable frame rates, Glass Shots, Hanging Miniatures and split screens.

Visual Materials to Cover in Class:

1. Those Awful Hats (1909, directed by D.W. Griffith).
2. Safety Last (1923, directed by Sam Taylor), “Trick Danger” clock shot.
3. Modern Times (1936, directed by Charlie Chaplin), Glass shots.
4. Ben Hur (1927, directed by Fred Nieblo), Hanging Miniatures.
5. City Lights (1931), Hanging Miniatures, Open-Air Stage and Painted Backings.
6. The Circus (1927, directed by Charlie Chaplin), the tramp meets a lion with a split screen.

Homework: Watch the film, Hugo (2011, directed by Martin Scorsese). Read: Photoplay April 1926 p.28 “How They Did It” by Frank Williams and answer the following questions in a short paragraph due next class:

<https://archive.org/details/photo29chic/page/n453>

1. What is the title and release date for the first film to use “The Williams’ Process”?

2. What was Frank Williams's personality like on set?

Lab: In class: see the Bell & Howell 2709 Camera – touch 35mm film.

***Jan. 23, Class – 2, Continue Introduction of VFX Techniques and Shot Design.**

Visual materials to cover in class:

1. Sunrise (1927, directed by FW Murnau) - Traveling matte methods in early black and white movies – The Williams' process.
2. Metropolis (1927, directed by Fritz Lang) - Eugen Schufftan use of the cut-out mirror technique.
3. The Dawn Patrol (1930, directed by Howard Hawks) – Dunning shots.
4. The Lady Killer (1933, Roy Del Ruth) – James Cagney comedy on the rear projection screen.
5. Tarzan Finds a Son (1939, directed by Richard Thorpe) – rear projection at MGM, Africa created on a sound stage in Culver City.
6. Too Hot To Handle (1938, directed by Jack Conway)- actors fly airplanes on a sound stage.
7. The Wizard of Oz (1939, directed by Victor Fleming), making a tornado in miniature.
8. It's a Mad Mad Mad Mad World (1963, directed by Stanley Kramer) – Rear Projection in color, less successful.
9. 2001: A Space Odyssey (1968, directed by Stanley Kubrick) and Superman the Movie (1978, directed by Richard Donner) – a bigger and brighter screen using Front Projection.
10. The Thief of Baghdad (1940, directed by Ludwig Berger, Michael Powell and Tim Whelan) – The Blue Screen traveling matte technique is developed.
11. Rogue One: A Star Wars Story (2016 directed by Gareth Edwards) and Solo: (2018, directed by Ron Howard). Old techniques rediscovered with new technology.
12. Hugo (2011, directed by Martin Scorsese) – VFX shot design development and shot improvement, using “paint overs”.
13. Various movies. Examples of Blue and Green screen process changing to digital.

Quiz: Clip from The Wizard of Oz (1939, directed by Victor Fleming), students turn in short paper at the end of class.

***Jan. 30, Class – 3, Lecture.**

- Review “Wizard of Oz” and discuss the quiz from the last Class.
- Review first examples of an Academy Award given for visual effects, class discussion on the VFX Oscar nominees for 1939.
- 2023 Oscar Nominations.
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Visual materials to cover in Class:

1. Clips from 1939 Oscar nominees: *The Rains Came* (directed by Clarence Brown), *Gone with the Wind* (directed by Victor Fleming), *Only Angels Have Wings* (directed by Howard Hawks), *The Private Lives of Elizabeth & Essex* (directed by Michael Curtiz), *Topper Takes a Trip* (directed by Norman Z. McCloud), *Union Pacific* (directed by Cecil B. DeMille), *The Wizard of Oz* (directed by Victor Fleming).
2. *San Andreas* (2015, directed by Brad Peyton) – water, out of control. Compare high-speed photography of water from “*The Rains Came*” versus CGI particle systems.

Lab: Analysis, did the work in each Oscar nominated film successfully advance the film’s story? Were the illusions effective? What worked about the VFX sequences? What didn’t work? How could the VFX have been more effective?

Homework: Research the career of stop motion animator Ray Harryhausen for Class-4 class.

***Feb. 6, Class – 4, Here Be Monsters – mechanical, puppets, stop motion and CGI. VFX becomes digital and what is the Uncanny Valley.**

Visual Materials to Cover:

1. *Die Nibelungen* (1924, directed by Fritz Lang) – onset mechanical dragon.
2. *Them* (1954, directed by Gordon Douglas) – giant ants that walk with hydraulics.
3. *King Kong* (1933, Merian C. Cooper)– stop motion animation by visual effects creator Willis H. O’Brien.
4. Ray Harryhausen, montage of his career.
5. *Mighty Joe Young* (1949, directed by Ernest B. Schoedsack) – Ray Harryhausen learns his craft.
6. *Jason and the Argonauts* (1963, directed by Don Chaffey) – Talos comes to life through the process of Dynamation.
7. *Golden Voyage of Sinbad* (1973, directed by Gordon Hessler) – the six-armed statue of Kali.
8. *Jurassic Park* (1993, directed by Steven Spielberg) – mechanical and CGI dinosaurs. The transition from stop motion to CGI using the Dinosaur Input Device (DID).
9. *Lord of the Rings* (2001, directed by Peter Jackson) – Balrogs fire creature in CGI.
10. *Star Wars Episode I* (1999, directed by George Lucas) –VFX becomes digital.
11. *The Polar Express* (2004, directed by Robert Zemeckis) – motion captured humans.
12. *The Curious Case of Benjamin Button* (2008, directed by David Fincher) – crossing the uncanny valley.

Homework: Students choose a VFX shot from early cinema to the 1950’s for discussion in class.

Be prepared to answer the following questions:

1. How was the shot done – what techniques were used?
2. What does the shot do to advance the narrative of the story?
3. Why is the shot convincing as an illusion - or if it is not, what would have made it better?

The professor will present an example from *The Beast From 20,000 Fathoms* (1953, directed by Eugene Lourie).

***Feb. 13, Class – 5, Practical onset special effects.**

- The hydraulic car flipper.
- Special Effects that defy gravity.
- Students present homework assignments in class.

Visual Materials to Cover:

1. *The Royal Wedding* (1951, directed by Stanley Donen).
2. *The Amazing Spider-Man* (2012, directed by Marc Webb).
3. *2001: A Space Odyssey* (1968, directed by Stanley Kubrick).
4. *Apollo 13* (1995, directed by Ron Howard).

Lab: Students present homework assignment of VFX shots from early cinema to 1950.

Homework: Watch, the film *Citizen Kane* (1941, directed by Orson Welles).

***Feb. 20, Class – 6, Visual effects created in the studio.**

- Researching how traditional visual effect secrets were achieved.
- The split screen and traveling split screen visual effect.
- Linwood Dunn is a visual effects pioneer at RKO Studios, and his own studio *Film Effects of Hollywood*.
- Development of Optical Printer effects.
- Special effects, artificial snow in cinema, origins and contemporary usage.

Visual Materials to Cover:

1. *Citizen Kane* (1941, directed by Orson Wells) new ways to tell stories with the optical printer.
2. *Bringing Up Baby* (1938, directed by Howard Hawks) the split screen “travels”.
3. *West Side Story* (1961, directed by Robert Wise & Jerome Robbins) making optical transitions.
4. *The Shop Around the Corner* (1940, directed by Ernst Lubitsch) down feathers for snow effects.
5. *It’s a Wonderful Life* (1946, directed by Frank Capra). Let it snow with fire-fighting foam.

Homework: Watch, The Curious Case of Benjamin Button (2008, directed by David Fincher)

***Feb. 27, Class - 7 Creating performances with VFX, actors on split screen, CGI humans, and subsurface scattering. More explorations of the Uncanny Valley.**

Visual Materials to Cover:

1. Phantom of the Opera (1925, directed by Rupert Julian) Lon Chaney's makeup.
2. The Prisoner of Zenda (1937, directed by John Cromwell & WS Van Dyke) split screen, the same actor playing two parts.
- 3 The Parent Trap (1961, directed by David Swift) identical twins created with VFX.
4. The Social Network (2010, directed by David Fincher) Winklevoss twins.
5. Gravity (2013, directed by Alfonso Cuaron) CGI astronauts in Earth's orbit.
6. Lord of the Rings: The Two Towers (2002, directed by Peter Jackson) Gollum.
7. Curious Case of Benjamin Button (2008, directed by David Fincher) a full CGI head for actor Brad Pitt.
8. In Rogue One: A Star Wars Story (2016, directed by Gareth Edwards), a deceased actor returns in CGI.

Introduction to AI tools for VFX and visualization.

Homework: Hugging Face - basic vocabulary of terms and text-to-image prompt assignment.

***Mar. 6, Class – 8, GUEST SPEAKER TBD - A leading Visual Effects Supervisor or Producer – conversations about large-scale VFX productions.**

Visual materials to include in class will vary based on the guest speaker.

***Mar. 13, Class – 9 will take the Mid-Term Exam.**

Identify new homework assignments due starting in Class 10 Mar 27.

An example of a VFX shot created in a film from 1950 to 2025 for discussion in the next class.

***Mar. 20, No Class – SPRING BREAK- March 16th-23th.**

***Mar. 27, Class 10 – Creating performances with VFX Class 7 Continued.**

9. Tron: Legacy (2010, directed by Joseph Kosinski) is less successful. Why?
10. Blade Runner 2049 (2017, Denis Villeneuve) Sean Young.
11. Planet of the Apes (1968, Franklin J. Schaffner) prosthetic make-up by John Chambers.
12. War for the Planet of the Apes (2017, directed by Matt Reeves) and Dawn of the Planet of the Apes (2014, directed by Matt Reeves) Andy Serkis, pioneer of motion capture acting.

13. Avatar (2009, directed by James Cameron) the alien/human stylized Na'vi.
14. The Hobbit: The Desolation of Smaug (2013, directed by Peter Jackson) Smaug comes to life.
15. Cats (2019, directed by Tom Hooper) is an example of the Uncanny Valley effect in full force.

Homework: Students are to bring an example of a VFX shot created in a film from 1950 to 2023 for discussion in the next class.

***Apr. 3, Class – 11, Contemporary CGI Techniques in Visual Effects**

Visual materials to cover:

1. The Matrix (1994, directed by Wachowski Bros.) The bullet time effect, past and future iterations.
2. A brief history of computers in VFX.
3. Global illumination techniques.
4. Motion Capture techniques.

Lab: Students continue to present homework assignments of VFX shots from 1950 to 2023.

***Apr. 10, Class – 12, Aviation VFX in Cinema – Real Aircraft, Miniature and CGI.**

Visual materials to cover:

1. The Dawn Patrol (1938, Edmund Goulding) Actors and Dunning shots.
2. Chain Lightning (1950, Stuart Heisler) Miniatures 1950 style at Warner Bros.
3. The Right Stuff (1983, directed by Philip Kaufman) Miniatures on wires photographed outdoors.

Lab: Continue discussion of student homework assignment VFX/1950 to 2023.

***Apr. 17, Class 13 - Continued Aviation VFX in Cinema – Real Aircraft, Miniature and CGI.**

4. The Aviator (2004, directed by Martin Scorsese) Radio-controlled, large-scale miniatures that fly – end of an era.
5. Red Tails (2012, directed by Anthony Hemingway) and Flight (2012, directed by Robert Zemeckis) CGI aircraft.

Lab: Continue discussion of student homework assignment VFX/1950 to 2023.

***Apr. 24, Class 14 – view the film “Raiders of the Lost Ark” (1981) directed by Steven Spielberg in class.**

***May 1, Class 15 – Lecture on VFX created for “Raiders of the Lost Ark” (1981), including professor’s involvement.**

- Lecture on War of the Worlds (1953, directed by Byron Haskin) versus War of the Worlds (2005, directed by Steven Spielberg).
- VFX in the vocabulary of film, past and present.
- How VFX shots are edited in a dramatic sequence.

Visual materials to cover in class:

1. Miniatures and environments for the original War of the Worlds - “WOTW” film
2. Design process for remake “WOTW” film
3. Sequence from Raiders of the Lost Ark (1981, directed by Steven Spielberg) vs. Indiana Jones and the Kingdom of the Crystal Skull (2008, directed by Steven Spielberg).

Test Prep for class Final.

Study Days are May 3rd through 6th.

Final Test Date: per USC calendar May 8th, 4:30 pm - 6:30 pm. Room TBD.

Suggested Reading for further research out of class:

VES Handbook of Visual Effects, Visual Effects Society - Focal Press, 3rd Edition 2020
Edited by Jeffrey A. Okun, Susan Zwerman. I recommend you purchase at www.amazon.com, which has the best price.

The Parade's Gone By
by Kevin Brownlow University of California Press ISBN-10: 0520030680

Special Effects – The History and Technique
Richard Rickitt Aurum Press, 2006

An Animated Life – Ray Harryhausen ISBN 10: 0712349197
Melies: Magie et cinema – Malthete & Mannoni (editors)

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://eotix.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.

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