CTAN 462 Visual Effects: Contemporary Approaches to Image Creation

Summer 2014 – Monday and Wednesday nights, 7:00pm-10:00pm in SCB 102

Instructor : Darren Kiner; dkiner@usc.edu; www.bouncelight.com

Student Assistant: Brian Rhodes II, bvrhodes@usc.edu

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 techniques.
      The course is taught by Darren Kiner, a very experienced CGI Lighting Artist and Supervisor. Darren has worked both in visual effects and feature animation, on films like Aladdin, Iron Giant, Chicken Little, Charlie Wilson's War, Black Swan and currently on Green Lantern.

Prerequisites:
None mandatory, but basic Maya literacy helpful. Familiarity with computers essential.

Course Length:
Six weeks, meeting twice per week, three hours each class meeting.

Required Book:
"Special Effects: The History and Technique" (2nd edition), Richard Rickitt, Billboard Books, 2007 ($47.50).
http://www.amazon.com/Special-Effects-Technique-Richard-Rickitt/dp/0823084086/ref=sr_1_1?s=books&ie=UTF8&qid=1305602698&sr=1-1

Optional Books:
"Digital Compositing for Film and Video", Steve Wright, 3rd Edition, 2010. ($35.85)
http://www.amazon.com/Digital-Compositing-Film-Video-Third/dp/024081309X/ref=sr_1_1?ie=UTF8&s=books&qid=1305602599&sr=1-1

 "The Art of Maya", by Autodesk, 4th Edition. ($30.85)
http://www.amazon.com/Art-Maya-Introduction-Computer-Graphics/dp/189717747X/ref=sr_1_1?s=books&ie=UTF8&qid=1305602665&sr=1-1

"The Art and Science of Digital Compositing" (2nd Edition), by Ron Brinkman ($52.46)
http://www.amazon.com/Art-Science-Digital-Compositing-Second/dp/0123706386/ref=sr_1_1?s=books&ie=UTF8&qid=1305602342&sr=1-1

Further Reading:
"Digital Lighting and Rendering" by Jeremy Birn ($35.00)
"The Visual Story", Bruce Block, Focal Press, 2001. ($25.00)
"Introducing Maya 6, 3D for Beginners", Dariush Derakhshani ($26.00)
 "Light- Science and Magic", by Fil Hunter. ($32.00)
 "The Invisible Art: The Legends of Movie Matte Painting" by Craig Barron
 "Visual Effects Cinematography", Zoran Perisic, Focal Press, 2000. ($32.00)
"From Word To Image", Marcie Begleiter, Michael Weise Productions, 2001.
($19.00)
 "Digital Storytelling, the Narrative Power of VFX in Film", Shilo McClean, MIT
Press, 2007

Grading Breakdown:
Class Project: **50%** (Required tasks to complete: Tracking, Roto, Modeling,
Lighting, Texturing, Rendering, Particle Effects, Green Screen, and Compositing of
UFO over downtown Los Angeles)
         -15% Modeling and texturing
         -15% Animating and Lighting
         -20% Rendering, Rotoscoping and Compositing

Final Exam 30%
Class Participation: 10%
Additional Bonus Points Possible
Computer Lab Time: 3 hrs/ Week.

Computer Programs Used:
Maya 2011, Mental Ray, Nuke 6.0, Boujou 4.0, Photoshop CS5,

Pre-Reading Assignment for classes 1 & 2:
"Special Effects"; Chapter 1 (p.10-47).
"The Art of Maya" (p.15-23) – Optional
"The Art and Science of Digital Compositing" Chapters 1 & 2 (p. 1-51) - Optional

Very important: Bring a portable (min 100 GB) hard drive with you to every class!

Week 1, class 1; (M, June 30th); History 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
Screening: "Reel Image/ Digital Filmmaking"

Week 1; class 2; (W, July 2nd); Practical Methodologies Survey
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
Introvision
Motion Control
Pyrotechnics and Explosions
Creating Weather Effects
Screening: Excerpts from "Things To Come"

Reading Assignment for classes 3 & 4:
"Special Effects", Chapter 2 (p.50-111).
"The Art of Maya" (p.25-32) – Optional
"The Art and Science of Digital Compositing" Chapter 3 (p. 53-91) - Optional

Week 2, class 3; (M, July 7th); Modern Effects Facilities Survey
Modern Digital Workflow
Modern Effects Facility
Integration w/ The Film Process
EFX Facility Staff Structure
Chain of Command/ Roles
EFX Production Software
EFX Facility Components
Naming Conventions
Production Pipeline Diagrams
Surprise Screening

Week 2, class 4; (W, July 9th); Modern Effects Facilities Survey II
Color Space Basics
Lin/ Log
LUT's
Gamma Pipeline
Effects Work Scheduling
Screening: "The Making of Visual Effects in Pearl Harbor"

Reading Assignment for classes 5 & 6:
"Special Effects" Chapter 3 (p 114-167)
"The Art of Maya", (p.35-55) – Optional
"The Art And Science of Digital Compositing" Chapter 4 (p.93-144) –
Optional

Week 3, class 5; (M; July 14th); 2D Digital - Rotoscoping and Matchmoving
Class Project Introduced
Rotoscoping Matte Extraction
Review of Nuke 5.0
Hands On Sessions
EXERCISE: Roto Background Plate (Nuke 5.0)

Basic Principles of **Matchmoving**, Workflow
Survey Packages
Stage Issues
Lens Distortion Review
Review of Boujou 4.1
Hands On Session
EXERCISE: Track Background Plate (Boujou 4.1)
Possible brief screening

Week 3, class 6; (W, July 16th); Introduction to 3D CGI and Modeling
Basic Principles of **3D CGI**, Workflow
Survey of Packages
3D Modeling Basics
Hands On Session
EXERCISE: Model UFO for Scene (Maya)

Modeling Efficiency
Use of 2D Cards
Poly vs Degree 1 Nurbs vs Degree 3 Nurbs
Proper Modeling Methodology
Character vs Hard Models
Hands On Session
EXERCISE: Continue UFO Model (Maya)
Possible brief screening

Reading Assignment for classes 7 & 8:
"Special Effects", Chapter 4 (p. 170-240)
"The Art of Maya" (p. 57-73) - Optional

"The Art And Science of Digital Compositing" Chapter 5 (p.149-183) - Optional

Week 4, class 7; (M, July 21st); CGI Lighting Technique
Review of Classic Cinematic Lighting
Review of CG Methods
Exterior vs Interior Methods
Current vs Future Directions
Direct vs Global Methods
Simulating Radiosity
Simulating Optical Effects
Incandescence Mapping
Case Study: Fifth Element
Hands On Session
EXERCISE: Light UFO (Maya)
Possible brief screening

Week 4, class 8; (W, July 23rd); CGI Texturing/ Shading
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
EXERCISE: Paint and Apply Texture Maps for UFO (Photoshop, Maya)
Possible brief screening

Reading Assignment for class 9 & 10:
"Special Effects", Chapter 5, (p. 244-265)
"The Art of Maya" (p.75-97) - Optional
"The Art And Science of Digital Compositing" Chapter 6 (p.189-231) - Optional

Week 5; class 9; (M, July 28th); CGI Animation and Camerawork
Review of Methods
Character vs Effects Animation
Keyframe vs Procedural Techniques
Dynamic Simulations
Particle Effects
Hands On Session
EXERCISE: Animate UFOs, Dust Effect in Scene (Maya)

Visual Composition
Vanishing Points
Perspective Correction
Natural Movement
Proper Camera Setup
Motion Control Rigs
Camera Projection
Hands On Session
EXERCISE: Render Scene Frames (Maya)
Possible brief screening

Week 5, class 10; (W, July 30th); Introduction to 2D Compositing
Survey of Operations
Pulling Mattes
2D Tracking Formats
Color Space
Image Manipulation
Handling Disparate
Elements Hands On Session
EXERCISE: Composite UFO into Scene (Shake)
Possible brief screening

No reading assignment for next week.
Spend your time working on your final project!

Week 6, class 11; (M, August 4th); Intermediate 2D Compositing
Nodal Trees
Scripting for Command Line
Using Alpha for Shadowing
Using Particles for Heat Signature
EXERCISE: Composite UFO into Scene (Shake)
Possible brief screening

Week 6, class 12; (W, August 7th): PROJECT WRAPUP/ LAST CLASS
Final Projects Due before class!!
Take final exam
Lecture on Careers
View Final Projects
Possible brief screening

Attendance:
Attendance at all classes is mandatory, and punctuality is expected. If a student misses a class, they must provide a valid excuse, and they must meet with the instructor to discuss a make-up assignment.

Missing an Exam, Incompletes:
The only acceptable excuses for missing an exam or taking an incomplete in the course are personal illnesses or a family emergency. Incompletes may only be given after the 12th week of the semester. Students must inform the professor before the exam and present verifiable evidence in order for a make-up to be scheduled. Students who take incompletes must also present documentation of the problem to the instructor before final grades are due.

Academic Integrity:
The School of Cinematic Arts expects the highest standards of academic excellence and ethical performance from USC students. It is particularly important that you are aware of and avoid plagiarism, cheating on exams, submitting a paper to more than one instructor, or submitting a paper authored by anyone other than yourself. Violations of this policy will result in a failing grade and be reported to the Office of Student Judicial Affairs. If you have any doubts or questions about these policies, consult "SCAMPUS" and/or confer with the Professor or Department Chair. The Student Conduct Code can be found in Section 11.00. Recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS.gov

Students with Disabilities:
Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure that the letter is delivered to the Professor as early in the semester as possible. DSP is located in STU 301 and is open 8:30am – 5:00pm, Monday through Friday. The phone number for DSP is (213) 740-0776.