

CTAN465L Digital Effects Animation 2 Units

Section 17912D, Spring 2013, Mondays 1-3:50pm, RZC117

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SA: TBD

Course Description:

This course will survey the tools and techniques to successfully create a spectrum of effects-based animation in computer-generated imagery (CGI), using Autodesk Maya animation software. Equal in importance but complementary to character animation, effects animation has a long tradition of creating environmental performances such as water, fire, explosions, and destruction in film. The course will expose the advancing 3d animation student with all aspects of digital effects animation, including particles, dynamics, and fluids. The course will encompass a series of hands-on exercises, so a prior basic working knowledge of Maya or other 3d application is essential. Exposure to Side Effects Houdini, a leading effects 3D application, is also provided from additional workshops.

Recommended Prior Courses:

CTAN 462, Visual Effects, or CTAN 452, Introduction to 3D Computer Animation

Course Length:

15 weeks, meeting once a week, three hours each class meeting.

Optional Books:

"Elemental Magic: The Art of Special Effects Animation", Joseph Gilland, Focal Press 2009. (\$32.00)
"Maya Visual Effects: The Innovators Guide", Eric Keller, Sybex, 2007. (\$26.00)
"Maya Studio Projects: Dynamics", Todd Palamar, Sybex, 2009. (\$30.00)

Supplemental Educational DVD's:

"Maya Fluid Effects: Fundamentals", David Schoenfeld, The Gnomon Workshop, 2005.

Supplemental Online Tutorials:

"Maya Particle Effects", Audri Phillips, Lynda.com (free to USC students)
"Maya 2011: Creating Natural Environments", Aaron Ross, Lynda.com (free to USC students)
"Maya Dynamics Category", DigitalTutors.com

Software Used:

Autodesk Maya 2012
Side Effects Houdini

Grading Breakdown:

Participation @10%
Weekly Assignments @30%
Final Project @30%
Final Exam 30%

The final project consists of (1) scene animation, reflecting a myriad of effects animation. The work will serve to demonstrate the range of techniques conveyed throughout the class, and allows the student to develop polished, elaborate work for their showreel.

Weekly assignments are due in the following class from when they are assigned.

Final exam is multiple choice in format.

Schedule:

Week 1- Jan 14: Introduction to Effects Animation

Traditional Methods
Use in Feature Animation
Use in Feature Film VFX
Intro to Maya Dynamics

In-Class Exercises: Particle Demos

Assignment: Show Film Samples

Week 2- Jan 21: MLK Day- NO CLASS

Week 3- Jan 28: Maya Dynamics

Particles and Emitter Review
Software Rendering
Hardware Rendering

In-Class Exercises: Particle Demos

Assignment: Create Rain

Week 4- Feb 4: Maya Dynamics

Collision Events
Rain
Texture Emission
Sprites

In-Class Exercises: Particle Demos

Assignment: Create Rain Collisions

Week 5- Feb 11: Maya Dynamics

Sprite Wizard
Geometry Instancing
Particle Emission from Particles
Particle Instancer
Fields
Goals

In-Class Exercises: Particle Demos

Assignment: Create Sprite Scene

Week 6- Feb 18: President's Day- NO CLASS

Week 7- Feb 25: Maya Expressions

Particle Summation Scene- Volcano
Expressions and MEL
Creation vs Runtime

In-Class Exercises: MEL Scripting, Bird Flapping

Assignment: Animate w/ Expressions

Week 8- Mar 4: Maya Dynamics

Rigid Body Dynamics
RBD Particle Interaction
Constraints

In-Class Exercises: Dynamics Demos

Assignment: Create Rube Goldberg Device

Week 9- Mar 11: Maya Dynamics

Springs
Soft Body Dynamics
Caching

In-Class Exercises: Dynamics Demos

Assignment: Create Soft Body Scene

Mar 18: Spring Break Week, NO CLASS

Week 10- Mar 25: Maya Nucleus System

Shatter
nParticles
nEmitters

In-Class Exercises: Nucleus Demos

Assignment: Create nParticle Scene

Week 11- Apr 1: nCloth

nCloth Interactions
Flags
Clothing

In-Class Exercises: nCloth Demos

Assignment: Create nCloth Scene

Week 12- Apr 8: Maya Fluids

Fluid Containers
Presets
Clouds

In-Class Exercises: Fluids Demos

Assignment: Create Fluids Scene

Week 13- Apr 15: Maya Fluids

Geometry Interaction
Explosions
Fire

In-Class Exercises: Fluids Demos

Assignment: Create Fluids Scene

Week 14- Apr 22: Maya Paint Effects

Presets
Tubes
Strokes
Custom Brushes

In-Class Exercises: Paint FX Demos

Assignment: Create PaintFX Scene

Week 15- Apr 29: Maya Hair, Fur

Maya Hair Presets
Custom Hair
Maya Fur Presets
Custom Fur
Grass

In-Class Exercises: Hair, Fur Demos

Assignment: Create Hair Scene

Wed May 8, 2-4pm, Final Exam, Submission of Final Project, TBD

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 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

MISSING AN EXAM, INCOMPLETES:

The only acceptable excuses for missing an exam or taking an incomplete in the course are personal illness or a family emergency. Students must inform the professor before the exam and present verifiable evidence in order for a make-up to be scheduled. Students who wish to take incompletes must also present documentation of the problem to the instructor or teaching assistant before final grades are due and are available only after the week 12 withdrawal deadline.

ACADEMIC INTEGRITY:

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.