

CTAN465L Digital Effects Animation

Spring 2016, 2 Units

Section 17912D, Wednesdays 9-11:50pm, SCB102, Lab Thurs 4:00-6:50am

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Office hours Mon 9am-noon, Tues 1-4pm, SCB210P

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 2015

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 13: 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 20: Maya Dynamics

Particles and Emitter Review

Software Rendering

Hardware Rendering

In-Class Exercises: Particle Demos

Assignment: Create Rain

Week 3- Jan 27: Maya Dynamics

Collision Events

Rain

Texture Emission

Sprites

In-Class Exercises: Particle Demos

Assignment: Create Rain Collisions

Week 4- Feb 3: Maya Dynamics

Sprite Wizard

Geometry Instancing

Particle Emission from Particles

Particle Instancer

Fields

Goals

In-Class Exercises: Particle Demos

Assignment: Create Sprite Scene

Week 5- Feb 10: Maya Expressions

Particle Summation Scene- Volcano

Expressions and MEL

Creation vs Runtime

In-Class Exercises: MEL Scripting, Bird Flapping

Assignment: Animate w/ Expressions

Week 6- Feb 17: Maya Dynamics

Rigid Body Dynamics

RBD Particle Interaction

Constraints

In-Class Exercises: Dynamics Demos

Assignment: Create Rube Goldberg Device

Week 7- Feb 24: Maya Dynamics

Springs

Soft Body Dynamics

Caching

In-Class Exercises: Dynamics Demos

Assignment: Create Soft Body Scene

Week 8- Mar 2: Maya Nucleus System

Shatter

nParticles

nEmitters

In-Class Exercises: Nucleus Demos

Assignment: Create nParticle Scene

Week 9- Mar 9: nCloth

nCloth Interactions

Flags

Clothing

In-Class Exercises: nCloth Demos

Assignment: Create nCloth Scene

Mar 16: NO CLASS- SPRING BREAK

Week 10- Mar 23: Maya Fluids

Fluid Containers

Presets

Clouds

In-Class Exercises: Fluids Demos

Assignment: Create Fluids Scene

Week 11- Mar 30: Maya Fluids

Geometry Interaction

Explosions

Fire

In-Class Exercises: Fluids Demos

Assignment: Create Fluids Scene

Week 12- Apr 6: Maya Paint Effects

Tubes

Strokes

Custom Brushes

In-Class Exercises: Paint FX Demos

Assignment: Create PaintFX Scene

Week 13- Apr 13: Maya Hair, Fur, BiFrost

Maya Hair Presets

Custom Hair

Custom Fur

Grass

In-Class Exercises: Hair, Fur Demos

Assignment: Create Hair Scene

Week 14- Apr 20: Wrap-up

Week 15- Apr 27: Review

Final Exam, Submission of Final Project, Fri May 6, 8-10am

**Week 13- Apr 13: Maya Hair, Fur, BiFrost
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

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/academicssupport/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

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.