Introduction to 3D Animation with Maya

Course Syllabus – CTAN 452
Fall 2008

Time & Place

- G 136 Tuesday 7-10pm (class)
- Lab Times: TBA
- http://TBA (web site)

Instructor

- Dariush Derakhshani (class@koosh3d.com)
- teaching assistant: Dave

Course Description

This course introduces students to all the major features of Maya: modeling, animation, texture, lighting, rendering, expressions, rigging, dynamics, and popular workflow. Concepts are quickly reviewed and explained and then demonstrated using Maya. Students will gain proficiency by following class examples as well as creating projects and exercises.

The coursework is designed to make sure the student is exposed to all relevant aspects of CG creation with Maya with an eye toward giving the student a base foundation from which to explore and expand. As such, the course will be flexible to the needs and pace of the class itself, and will use the following weekly schedule as a basis only. Therefore, it is of the utmost importance to keep pace as best as possible and not allow weekly assignments to accumulate over time.

Personally, I believe education is a highly flexible matter, and I intend on reading the capability of the class to continually adjust the needs and goals of the course accordingly over time. The final intention is to leave the student with a general foundation of all aspects of production in Maya as well as deeper coverage of the most important needs of CG production workflow: lighting, rendering, and integration.

The course will aim to teach such concepts and practicalities of workflow in each lecture, and will put the onus on the student to practice with Maya in lab time as well personal time.

Weekly exercises emphasizing design and production technique will force the student to discover Maya. Be prepared to work outside of class to explore. I simply cannot show you how Maya works; it must be self-discovered, as there are tons of different workflows that can accomplish the same goal. It's aggravating at times, but it's the best way to learn.

I expect you to take the fundamentals I will expose you to further on a weekly basis to solve design and animation challenges to broaden your understanding of not just this piece of software, but digital animation and design. **This class is not about learning software.** Anyone can do that at home with a book and some patience. This class is about exploring creativity using an extremely creative and technical tool using left brain tinkering and right brain thinking. The more of yourself you put into it, the more questions you can raise with myself and the TA, and the more you will learn.

Required Reading

- *Introducing Maya 2008*. Dariush Derakhshani. Wiley, 2007. ISBN: 0470183564. This text is available at the University Bookstore as well as online and in bookstores.

Grading Breakdown

Grading will be determined on attendance and participation, weekly assignments, quizzes on the reading material, as well as a short final project. All weekly exercises are due at the beginning of the following class. 50% of your grade will be based on your weekly design assignments.

Weekly Schedule

The weekly schedule is open to change as the course goes on. This is a rough guideline as to what you can expect overall. Remember, it is important to keep up with each class, as this course will be flexible. If you do miss a class, make sure to check in with the TA. The breakdown below gives you an idea of what we will cover in class. The reading, exercise, and/or design assignments given are due the following week, unless otherwise noted.

Week 1: Workflows, Pipelines of Production. Core Concepts will be reviewed. The Maya Interface. Simple object creation, manipulation, and animation.
    Reading Assignment: Chapters 1-2
    Design Assignment: "Birth, Expansion, Recession." Design and animate an abstract piece of no less than 5 seconds (150 frames) and longer than 10 seconds (300 frames) that explores the concept of birth, expansion, and/or collapse using primitive shapes and simple transformations learned in class.

Week 2: Further UI exploration, Hierarchies, In Class exercise review of Solar System
    Reading assignment: Chapter 3
    Exercise Assignment: Complete Solar System
    Design Assignment: "Nested Structures." Design and animate a simple abstract piece of no less than 150 and more than 300 frames (@ 30fps) based on your understanding of a simple nested structure and how it moves. The solar system is an example of a nested structure. A mobile that hangs over a baby's crib and rotates is another. An expanding police baton, etc. The whole structure must have a movement, while it's children move under it as well.
    Also, Select a mechanical object that is fairly simple, and gather reference for it. Present this object at the end of Week 3's class for approval. You will be modeling this object starting in Week 3.

Week 3: Introduction to Poly modeling. Discuss and approve mechanical objects for modeling assignment.
    Reading Assignment: Chapter 4
    In Class Exercise: Building a desk. Begin modeling the hand (chapter 4)
    Exercise Assignment: Finish and finesse the hand. The amount of detail a model is given is contingent upon the blood sweat and tears poured into it by the artist. Modeling can be a very tedious and laborious task, but also extremely satisfying. It is no more or no less than the art of sculpting in reality.
    Design Assignment (Due in 2 weeks): Begin the model of your selected and approved mechanical object. Be prepared to show a work in progress and discuss methodology.

Week 4: Further Poly modeling workshop – review the hand and discuss various techniques used by the students in their assignment. Assembling complex objects – building a catapult. In class discussion on methods for modeling everyone's mechanical objects.
    Exercise Assignment: Build the locomotive (Chapter 4)
    Design Assignment: Complete the model of your mechanical object for presentation

Week 5: Review and discussion on models of the mechanical object. NURBS Modeling Techniques.
    In Class Exercise: Building the axe.
    Reading Assignment: Chapter 5

Design Assignment: Build your own design of an axe, golf club, claw hammer, computer mouse, or similar object using NURBS techniques.

Week 6: Review and discussion on models of models from Week 5 assignment. Deformers, SubD modeling Techniques.
> In Class Exercise: Alien Hand, Starfish
> Reading Assignment: Chapter 6
> Exercise Assignment: Build the tea kettle
> **Design Assignment**: "Static Flow." You must design and sculpt, using SubD techniques, a
sculpture that reflects your understanding of an organic flowing motion that is somehow frozen in time.

Week 7: Review and discussion of "Static Flow" designs. Maya Shading and Texturing.
> In Class Exercise: Texturing the axe.
> Reading Assignment: Chapter 7
> Exercise Assignment: Texture the planets in the solar system exercise.
> **Design Assignment**: 1. "Static Flow Revisited." You must decide on a real world material and
assign it to your Static Flow sculpture. Sandstone, limestone, clay, feathers, banana peels, whatever. Just make sure it works. 2. Color/Shade the Nested Structures exercise to add the element of color to the animation. You may animate the shaders to further the design experiment. 3. Color/Shade the Birth, Expansion, Recession exercise to further the design.

Weeks 8 through 15 will be determined in a second handout of the syllabus later in the course (but by Week 6 or so). This will help me gauge your capabilities and the speed and understanding of the class. The best laid plans of mice and men…

Final Exam
This course will not have a final exam, per se. There will be a final project that will account for 25% of your grade that will be determined and assigned by Week 10 or so. This project will be based on a short (and I mean short!) you wish to design/build/animate based on the aspects of Maya you like the most. This final project and it's requirements will be discuss further in the second handout of the syllabus on or about Week 6.

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 any classes, Incompletes:

The only acceptable excuses for missing a class 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.

Academic Integrity:

The School of Cinema-Television 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 T.A.

Of crazy production schedules and insane clients:
I'm a Creative Director and VFX Supe at a Visual Effects boutique in Santa Monica, and as such am always called upon in the worst times to fix things and put clients at ease. As such, I confess, I may need to be late on occasion or even to cancel a class on short notice through contact with our TA. In case of such an unfortunate event, we may make up the class at a later date as determined on the following week. But please do be aware that things like this in production work pop up at the last minute, and I apologize in advance for any lateness on my part to a class or if a cancellation of a class that may occur.

Of assignments and staying up to date:

All assignments are due at the beginning of class and must be in presentable form (as determined in class) for me to look at and for the class to review and discuss. This is as much a chance for you to learn a tool as it is to further your understanding and interpretation of art. Don't let assignments go late. I will deduct 25% of the final letter grade for every week an assignment is late. Assignments may be improved upon through the course as agreed upon with me in advance for extra credit.
I will not hunt you down. I will not remind you to turn in late work. I will not fill you in on missed lectures or materials. You may always contact me with questions, of course, but make sure you do your due diligence in catching up if you stray behind first. I don't say this to be mean, I am excruciatingly busy at work and may take longer than I'd like to get back to you. We also have a very capable TA in the course. Make sure to be on his good side. Candies and treats always were a favorite of mine when I was a TA back in the dark ages.