Introduction to Computer-Aided Animation CGS 3034, Credits 3

Prerequisite: Precalculus - Algebra and Trigonometry MAC 1147 or equivalent

Instructor: Brent Rossen
Course Webpage: http://www.cise.ufl.edu/class/cgs3034sp07/
Email: brossen@cise.ufl.edu
Office Hours: TBA

Justification for Course:
CGS 3034 introduces undergraduates, especially those within the Digital Arts and Sciences degree programs, to applied computer graphics topics. The course will not be limited to DAS students and can be taken by anyone who meets the prerequisite course requirement. The interdisciplinary nature of this course stresses the application of computer science and engineering to creative disciplines. Computer Aided Modeling and Computer Aided Animation are complementary courses that can be taken in any order. There is a significant amount of cross-over between the courses, allowing students to refine the skills learned in one course while learning the main material of the other course.

Catalog Course Description:
Introduction to topics relating to computer-aided animation. Rigging for forward and inverse kinematics. Skin weighting. Morph targets. Expression-driven animation, rigid-body and particle simulation. An introduction to interactivity will be covered.

Goal of Course:
Introduce students to topics in applied computer graphics, specifically in computer aided animation. Present standard animation techniques, forward and inverse kinematics, morph targets, expression-driven animation, rigid-body and particle simulation.

Course Content Overview:
1. Regular multimedia-enhanced lectures in a CIRCA-equipped classroom
2. Peer critique and Socratic seminars to discuss relevant works
3. Multimedia demonstrations (VHS, DVD, Internet)

Required Text:
Book: Learning Autodesk Maya 8 – Foundation. ISBN: 189717733

Required Software:
Maya Unlimited (currently 8). Available in E115 – CISE computer labs, students do not need to purchase.
Makeup Policy:
Late submissions will be penalized by 10% per day, up to a maximum of 50%. This is specifically to accommodate miscalculations of rendering time. Please plan final renderings for one to two days in advance.

Make-ups are permitted only in the following circumstances: religious holidays, student illness or medical impairment, absence subject to the twelve-day rule, examination conflicts, or legal impairment. In these circumstances the student should notify the instructor as soon as they are aware of a potential exam or deadline conflict so that an alternative may be established.

Extra credit may be given at the instructor’s discretion.

Grading:
1. Projects ........................................................................... 50%
2. Participation........................................................................ 10%
4. Midterm Exam................................................................. 10%
5. Final Exam......................................................................... 10%
6. Final Project........................................................................ 20%

Lecture Topics:
1. Basic 3-D Concepts: Cartesian Coordinate System, Pivots, Transformations, Scene Graph, Coordinate Spaces (World, Object, Local)
2. Introduction to types of animation: path, keyframe, nonlinear.
3. Animation curves: reading, editing, manipulation of tangents to control easing.
6. Lattice deformation.
8. Expressions.
9. Morph targets and blend shapes.
10. Particle systems and point masses. Emitters, forces, and constraints.

Tentative Projects:
1. Keyframe Animation, Tangents, Animation Curves, Deformation
2. Animated Camera, Animation Hierarchies, Repeated Animation
3. Depth of Field Camera, Motion Paths, Driven Keys, Non-Linear Animation
4. Skeletons, Kinematics, Skinning, IK/FK Blending, Walk Cycles, MEL Shelf Buttons, Jiggle Deformers
5. Facial Animation
6. Exporting to an interactive system
7. Final Project – Putting it all together – Design, Modeling, Animation, Shading, Lighting, Rendering
**Class Attendance Policy:**
You are strongly encouraged -- but not required -- to attend/view all lectures. However, you are responsible for all in-class announcements and course content.

**Required Computer Facilities:**
A CISE Computer account, this can be acquired in CSE E114 Lab. Just tell the person at the help desk you need a CISE account and they will help you set it up. This account is used during lab in E115 and for projects.

**Academic Integrity:**
All students admitted to the University of Florida sign a statement of academic honesty committing themselves to be honest in all academic work and acknowledging that failure to comply with this commitment will result in disciplinary action.

**Accommodation for Students with Disabilities:** Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

**UF Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

**Software Use:** All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.