CSCI 4553: Computer Animation Design II: Spring 2012
Credits: 3.0
The George Washington University
Department of Computer Science
Room: 2nd Floor Computer Lab, Room 211, Tompkins Hall
Class Hours: Thursday 6:10 - 9:00 PM
Instructor: Eric Piccione
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Office Hours: By Appointment

Course Description
This animation course builds upon the foundation laid out in CSCI 4552: *Introduction to Computer Animation*. It builds on the basic 3D computer animation techniques, such as key framing, rigging and posing, and delves into such advanced techniques as custom rig construction, scripting, particle generation and physics simulation. While an understanding of the advanced software tools will be necessary to attain the objectives of this course, grade evaluation is based on the development and successful demonstrations of mastery of timing, visual design, and storytelling abilities. As with CSCI 4552, the emphasis of this class is on creativity, experimentation and critical thinking. The goal is to be able to use the computer as a tool to tell a compelling visual story.

Prerequisites
The successful completion of CSSI4552, and a commitment to learning how 3-Dimensional artwork is created, as well as a willingness to spend time in the lab outside of class completing each stage of the class projects. Students should be inquisitive and willing to share with other students techniques they discover as they progress through the assignments.

Method of Instruction
This course will follow the format of a production studio, with deadlines, milestones and development schedules. A variety of educational techniques, including lectures, demonstrations, in-class critiques, consultations, directed discussion, team project effort, and student presentations will be employed. The focus of the course will be on developing a one-to-three minute animation, along with source data and a journal that documents the project. A formal presentation of the final project will substitute for the final examination. Short quizzes may be used to reinforce reading assignments.

Successful students will:
- Be able to convey mood and emotion through animation
- Understand the principles of 3D scene building and modeling
- Use texturing and lighting techniques to create visually sophisticated imagery
- Be able to conceptualize and produce artwork that utilizes the unique abilities of the 3D medium
- Create and rig mechanical and organic objects for animation
- Put together a finished animation/scene

Course Expectations
Projects: Students will participate in exercises designed to illustrate lessons taught in-class. Students will also write a synopsis, present storyboards and a final rendering/animation to be critiqued by the class. Milestones will be the completion of each major step in the project and a mid-term storyboard that will be presented for critique to the class and a final screening at the end of the semester of the finished project.

Critical Participation
It is important to attend each class and stay on track during the semester. Students who miss a section will be expected to catch up outside of class to ensure that they are proceeding with the rest of the class.

Attendance, Deadlines, Etc.
Attendance will be taken at the beginning of every class and again 30 minutes before the end of class. Early departure is considered an absence. Three unexcused absences will result in a lower grade. All assignments are to be turned in on time. If you miss a class, you still are responsible for the material covered that day, including project or homework assignments and changes in schedules. Late assignments will be lowered by one letter grade for each class missed.

Work Habits
This is taught as a studio art class, significant class time will be spent working on projects in class with ample time to ask questions and get advice on how best to proceed. Students are expected to come to class prepared to work; this means bringing their work ***to every class***, including work in progress, material to be scanned, drawing paper and

anything else that is needed for working on a particular project. Proper file management and backup technique is also to be followed based on classroom instruction.

Required Text
Title: A*nimation from Pencils to Pixels: Classical Techniques for the Digital Animator*
Author: Tony White.
Publisher: Focal Press
ISBN#: 9780080475851

Although time will not allow us to follow the entire 3DS Max Bible chapter-by-chapter, we will target specific subject matter that is relevant to particular lessons. The book will also act as a reference and guide throughout the semester. It is strongly suggested that students take advantage of its detailed information and tutorials.

Recommended Texts
Title: *3D Studio Max 2012 Bible*
Author: Kelly L. Murdock.
Publisher: Wiley
ISBN#: 978-1-118-02220-7

Note: I will assume that students still own a copy of the 3D Studio Max 2012 Bible *from the previous semester, and will periodically assign chapter readings as necessary. Any students who no longer have their copies please let me know.*

Title: *Autodesk 3ds Max 2012 Essentials*
Author: Randi L. Derakhshani
Publisher: Sybex
ISBN#: 978-1118016756

Title: *Character Animation with 3D Studio Max*
Author: Stephanie Reese
Publisher: Coriolis Group
ISBN#: 978-1576100547

Title: *The Illusion of Life: Disney Animation*
Authors: Frank Thomas and Ollie Johnston
Publisher: Hyperion
ISBN#: 0-7868-6070-7

Title: *The Animator's Survival Kit*
Author: Richard Williams
Publisher: Faber and Faber
ISBN#: 0-571-20228-4

Websites References
http://www.cgsociety.org/ : excellent forums for solving technical problems with 3D programs
http://rhizome.org/ : for information about what's going on in the digital arts
http://animationnation.com/: an excellent animation community site
http://www.11secondclub.com/: The 11-Second Club, a monthly character animation competition

Autodesk Resources:
Interface Overviews:
http://download.autodesk.com/us/3dsmaxdesign/interface_overview/2010/3dsMaxUIOverview.htm

Tutorials from Essentials:
http://usa.autodesk.com/adsk/servlet/item?siteID=123112&id=12754609&linkID=9241175

3ds Max Services, Support and Training Videos:
http://usa.autodesk.com/adsk/servlet/ps/index?siteID=123112&id=5585571&linkID=9241177

Essential Skills Movies:
http://download.autodesk.com/us/3dsmax/skillmoviesv9/

Evaluation
Students attending this course have very different levels of artistic skill and therefore the final grading is not judged solely on technical or artistic proficiency. The student's willingness to explore and understand new ideas and incorporate new learning progressively into their work over the course of the semester is of utmost importance in the final grade. A student who has an open mind and shows an interest and excitement toward learning digital tools will produce informed artwork and achieve a higher grade. Students will also have a sense of community and share tips and solutions with each other. Grading breakdown is as follows:

In-Class Participation: 10%
In-Class Exercises: 10%
Quizzes: 10%
Homework Assignments: 20%
Project: 50%

Grading Standards*:

Score of A: Superior
- Approaches the assignment in a visually/intellectually interesting way
- Completes all stages of the exercises on time
- Research outside of class contributes significantly to the work
- Technically well executed with no obvious errors

Score of B: Strong
- Explores the topic of the assignment thoroughly
- Clear understanding of ideas discussed in class with some outside research
- Completes all stages of the exercises on time
- No more than a few technical errors

Score of C: Competent
- Covers the main topic adequately
- Shows understanding of the ideas covered in class, but does not go beyond
- Most stages of the exercises are completed on time
- Technically well done with several small errors or a couple of major flaws

Score of D: Weak
- Does not fully address the topic as assigned
- Does not show an understanding of ideas discussed in class
- Work is not turned in on time
- Major technical flaws and lack of serious effort to fix them

Score of F: Inadequate
- Fails to address the topic and does not show understanding of ideas discussed in class
- Exercises not completed or partially completed
- Is severely flawed mechanically

**Late projects may be dropped a letter grade.*

SCHEDULE:
Note: Schedule subject to modification. All schedule updates will be presented in class.

Major Due Dates

Weekly Assignments	**Chapters and exercises**
Thursday, February 9	**Story due** (25% of project evaluation grade)
Thursday, February 23	**Storyboards due** (25% of project evaluation grade)
Thursday, April 26	**Final Project due** (50% of project evaluation grade)

Week 1:
1/19: Course Overview/Principles of Character Rigging
- Building a basic character rig
- Studying walk cycles.

Assignment for the week:
- *Construct a simple skeleton, attach an IK Chain to it and create 2 simple walks of at least 4 steps. The first walk will be a normal realistic human gait, the second should be an exaggerated one that shows personality. No geometry is required.*

Week 2:
1/26: Introduction to scripting/Rigging a character
- Building a complex character rig, Part 1

Assignments for the week:
- *Begin working out your concept for your final project.*

Week 3:
2/2: Character skinning
- Building a complex character rig, Part 2
- In-class discussion of story ideas.

Assignments for the week:
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- Read Chapter 2, "Character Design," in *Animation from Pencils to Pixels.*
- ***FINALIZE YOUR FINAL PROJECT CONCEPT.*** *Concepts will be handed in at the beginning of the next class.*

Week 4:
2/9: Project scheduling
- **Story for your project is due.**
- Discussion of a comprehensive development schedule.
- Building a complex character rig, Part 3

Assignment for the week:
- *Finish building a character rig ready for skinning, if it has not yet been completed.*
- Draft your development schedule, based on the template provided.

Week 5:
2/16: Concepts and storyboards
- **Development schedules are due.**
- Examination of character and setting concepts, and in-depth storyboard creation.

Assignments for the week:
- Read Chapter 6, "Storyboarding and Animatics," in *Animation from Pencils to Pixels.*
- Create storyboards for your project.

Week 6:
2/23: Setting the scene
- **Storyboards are due.**
- Arranging set dressing and placement of characters for best effect.
- Quick review of the 12 Principles of Animation.

Assignment for the week:
- Read Chapter 15, "3D Overview," in *Animation from Pencils to Pixels.*
- Pick two of the Principles and create simple examples of them.

Week 7:
3/1: Timing is everything!

- Using timing to set the tone for actions and interactions between characters.
- Communicating ideas and emotions through body language.

Assignments for the week:

- Read Chapter 16, "Creating 3D Movement," in *Animation from Pencils to Pixels.*
- Continue to work on final project according to the development schedule.

Week 8:
3/8: Facial Rigging

- Techniques on Facial rigging

Assignments for the week:

- Continue to work on final project according to the development schedule.

Week 9:
3/15: Spring Break. No class.

Week 10:
3/22: Special effects and Reactor

- Creating visual effects and physics-based animation.

Week 11:
3/29: Project review

- Progress updates on final projects.
- Storytelling with lighting and cameras.

Week 12:
4/5: Lab work in class.

Week 13:
4/12: Lab work in class.

Week 14:
4/19: Lab work in class.

Week 15:
4/26: **FINAL DEADLINE**: Final projects are DUE for grading.

Animation Festival:
TBA: Final projects will be presented.