

## **GAME 1031 3D Animation II**

### **S Y L L A B U S**

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Course: Game-1031-100  
Semester: Fall 2007  
Campus: Northridge (NRG)  
Room #: 4269  
Class meets: Sat 1pm-4pm  
Prerequisite: None  
Lab hours: On classroom door

Instructor: Don Alexander  
Office Hours (walk-in):  
Office Hours (by apt. only):  
Office Location:  
Phone:  
Email:

#### **Course Description**

This course will continue focusing on exercises to refine the animator's skill in the 12 principles of animation. Exercises in body mechanics will be emphasized. Focus will be directed towards a character's weight center of gravity and mass. Other areas of focus will include camera, staging and the animator's ability to relay personality through their animated performances. Bone systems and rigging techniques will be introduced along with discussion and various examples. This will include skinning and weighting, FK and IK, constraints, mesh deformers, morph targets / blend shapes. Students will then explore animating their characters to test their rigs, as well as discussions on optimization for export into real time game engines.

#### **Prerequisites & Preferred Foundation**

GAME 1015 3D Animation I

#### **Course Rationale**

This course is aimed at furthering the student along the 3d art and visual side of the technical certificate for the continuing education game development program.

Its purpose is to familiarize the students with working in a 3-D environment and build a working knowledge of the basic tools used in modeling and rendering. This course will be required in for future "advanced" 3d related classes.

#### **Class Modules:**

Module01: Introduction Bone Hierarchies and Rigging  
Module02: Creating a Bipedal Bone Hierarchy and Rig  
Module03: Animating a Melee Idle using the Bipedal Rig from Module02  
Module04: Creating a Quadrapedal Bone Hierarchy and Rig  
Module05: Animating a Run Cycle using the Quadrapedal Rig created in Module04  
Module06: The Body Mechanics of Throwing a Ball \ Slow and Fast  
Module07: Body Mechanics of lifting a heavy object  
Module08: Body Mechanics Jumping and Falling  
Module09: Body Mechanics Action – Reactions Animating an Ingame Attack and Response  
Module10: Creature Animation –Winged Creature Cycle  
Module11: Creature Animation –Animating Walk Cycle for a Bat like Creature  
Module12: Creature Animation –Animating a Swimming Sea Serpent

### **Student Objectives and Outcomes**

During the term of the course, students will learn to work within virtual 3-D space and animate volumetric objects including: transformations in positions, rotations, and scale. Most importantly for games, a student will get a fundamental understanding of interactive animation techniques and technical issues. This knowledge with the continuing education in character animation, students will gain confidence in creating highly entertaining in game performances

Students will learn these fundamental game tools: Animation controllers, hierarchies, exporting, and checking animations in an in-game editor. Students will also learn the importance of file backup and management.

### **Instructional Methodology**

This is a 42 hour course. Each class takes up approximately 3 of those hours. During each class, the instructor will present new information (lecture) and supervise assigned work to help students develop their 3d modeling skills (lab). Solutions to individual student problems are demonstrated for the entire group. The instructor's ability to evaluate students' progress is founded on observing their productivity in class as well as the quality of their work.

### **Supplies**

During the semester, you will be required to have a pencil or pen, and a 3-ring notebook with paper and pockets (in which to keep notes, exercises, projects and information sheets). You will also need a Jump Drive to provide a temporary backup of your coursework, and (at least) one blank CD-R ("CD-R" Write, not "CD- RW" Re-Write) to provide a permanent backup.

### ***Recommended Textbooks and dvds:***

**Required:** The Art of 3-D Computer Animation and Effects, Third Edition, by Isaac Victor Kerlow, John Wiley & Sons, ISBN: 0471430366; The Animator's Survival Kit by Richard Williams, Faber & Faber, ISBN 0571212689;

**Recommended:** 3DS Max 6 for Windows: Visual QuickStart Guide by Michele Matossian, Publisher: Peachpit Press, ISBN: 073571391X ; The Illusion of Life: Disney Animation by Ollie Johnston & Frank Thomas, Disney Editions, ISBN: 0786860707; Cartoon Animation by Preston Blair, Walter Foster, ISBN-10: 1560100842.

From Script to Screen by Shamus Culhane

### **Instructional Resources**

Discreet's 3DS Max [9]: an industry standard software package used to create 3-D imaging and animation for multi-media, interactive-media, broadcast production, commercial television, and film.

### **Helpful Websites**

#### **Software & Tools**

- <http://www.discreet.com>
- <http://www.flay.com>
- <http://www.3drender.com>
- <http://www.3dcafe.com>
- <http://www.alias.com>
- <http://www.lightwave3d.com>

#### **Online News Media**

- <http://www.menithings.com>
- <http://www.awn.com>
- <http://www.cinefex.com>
- <http://www.cgtalk.com>
- <http://www.cgnetworks.com/>
- <http://www.highend3d.com>

- <http://www.postmagazine.com/post/>

### **Game Development**

- <http://www.igda.org>
- <http://www.austingamedevelopers.org/>
- <http://www.gamasutra.com>
- <http://www.gamespy.com>
- <http://www.utexas.edu/students/egads/>
- <http://www.gamespot.com/>
- <http://www.gamers.com/egm/index.jsp>

### **Online Broadcasting:**

- <http://www.atomfilms.com>
- <http://www.ifilms.com>
- <http://www.hotwired.com>
- <http://www.wildbrain.com>
- <http://www.cartoonnetwork.com>

### **Grades**

Students will be given 4 grades during the semester. These grades provide students with the opportunity to evaluate their standing in the class. Students can contact the instructor during the office hours listed at the beginning of this document if they need to discuss their progress, or to seek additional help. Students will be also be quizzed during the semester in preparation for the midterm and final exams. Though quiz results are not included in your final grade, they help students assess what skills need additional work before taking the exam.

### **Point total ranges:**

- A** (89.5% and up)
- B** (79.5% to 89.4%)
- C** (69.5% to 79.4%)
- D** (59.5% to 69.4%)
- F** (59.4% or less)

### **Student Evaluation**

This course strengthens the student's 3D modeling and rendering skills through a series of exercises, each with assigned objectives and criteria. All exercises are graded using **four scales** (Focus, Principles, Craftsmanship, & Creativity). Each scale awards 4-0 points based on the student's effort to meet the exercise criteria (Superior – Unacceptable), for a total of **16 possible points per exercise**.

Scales:

- A) **Focus** – (*criteria established in assignment*) ability to follow directions, make an effort to meet exercise objectives, work hard in & out of class, and complete the work on time.
  - 4 – On time and meets or exceeds all criteria.
  - 3 – On time with one criterion missing.
  - 2 – On time with two criteria missing.
  - 1 – On time with three or more criteria missing.
  - 0 – Late or has inappropriate solution to the problem, incomplete
- B) **Design Principles** – (*criteria established in assignment*) ability to understand and demonstrate the use of the elements & principles of design, as well as the 3D modeling principles.
  - a. Elements of Design (line, shape, form, space, value, color, texture)
  - b. Principles of Design (contrast, unity; dominance, balance; pattern, movement, rhythm)
  - c. Modeling Principles (reference, proportion, exaggeration, weight, detail, functionality)
  - 4 – Superior understanding and application of the design principles

- 3 – Good ability to utilize the principles of the design principles
- 2 – Several errors in regards to the application and understanding of the design principles
- 1 – Large number of errors in application and understanding of the design principles
- 0 – No regard to application and understanding of the design principles

C) **Craftsmanship & Technique** – (*criteria established in assignment*) *Craftsmanship* is aptitude, skill, and manual dexterity in use of media and tools – knowledge of interface & keyboard shortcuts, correct use of tools without the aid of notes, correct use of vocabulary. *Technique* is the manner and skill in which the student uses the tools to achieve the chosen effect – efficient use of geometry [no duplicate, hidden, or wasted geometry], proper use of surfaces [no Default surfaces; correct settings or textures in the appropriate surface channel], & well-organized files with properly placed pivots, labeled layers, and file type extensions.

- 4 – Great skill in manipulation of tools and technique used to express creative idea.
- 3 – Proficiency in manipulation of tools and technique used to express creative idea.
- 2 – Some degree of skill in manipulation of tools and technique used to express creative idea.
- 1 – Less than average ability or skill in manipulation of tools and technique used to express creative idea.
- 0 – Little or no apparent skill in manipulation of tools and technique used to express creative idea.

D) **Creativity, Inventiveness, and Independence** – (*criteria established in assignment*) ability to find unique solutions to assignment, elaborate on assigned theme, transfer concepts/techniques from previous exercises, work through problems/difficulties, originality of style & idea, and the ability to work independently.

- 4 – Superior degree of originality throughout; very unique solution; theme has been elaborated on to a high degree; ability to take initiative in assignment that augments what is learned; self-initiated; complex solution.
- 3 – Above average degree of originality throughout; theme is present with some elaboration; shows ability to work and think independently; May have sought additional material to accomplish assignment idea.
- 2 – Above average degree of originality throughout; theme is present with little elaboration; some initiative in working and independent thinking.
- 1 – Below average originality; theme is not fully developed; little initiative in working and independent thinking.
- 0 – Lack of originality; theme is very trite, weak, stereotypical, or copied; very little or no initiative; student waits to be told what to do

**Grading Rubric: [here's a typical one]**

Attendance and Participation	30%
Essay/Reviews	20%
Projects	40%
Quizzes	10%

**Attendance and Class Participation**

Attendance is mandatory. In a 14-week course, students only have 42 contact hours with their instructor. This is roughly equivalent to one week on production in an industry studio. The level of a student's day-to-day class participation is evaluated and will be reflected in their final grade.

Consistently late arrivals can add up. If you know you will need to arrive consistently late or leave consistently early, or if you know you will have to miss a large portion of the class, you should withdraw yourself and register again during a time when you can commit yourself to the work.

An instructor may drop you after 3 unexcused absences. I will drop you after 5 absences whether excused or not.

### **Lab Participation**

Working with 3-D software can take a great deal of time and it may be necessary for students make time to come on campus and work during the open lab hours. Though lab time is not tracked, you are responsible for meeting project deadlines.

If you find you are having trouble getting all your work done in class, the classroom is open on Fridays and Saturdays. Lab hours are posted on the door outside the classroom.

### **Withdrawal**

Students are responsible for withdrawing themselves if they are unable or decide to not to continue coming to class. If a student simply stops coming to class, a failing grade will appear on his/ her transcript. Instructors may also withdraw you if you miss too many classes. Please contact the instructor if you know you must miss a class.

### **Incomplete**

Meeting deadlines is one of the most important aspects of production. Therefore, all work must be completed within the class deadlines. If there is a lack of work, the student will be graded on the work that the instructor has received -- the instructor will not give incomplete grades. The skills taught in this class act as a foundation for subsequent classes. If a student knows he or she will not be able to complete the class, they should drop the class and register again during a time when they know they can complete the full course.

### **Scholastic Dishonesty**

“Acts prohibited by the college for which discipline may be administered include scholastic dishonesty, including but not limited to cheating on an exam or quiz, plagiarizing, and unauthorized collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, research or self-expression. Academic work is defined as, but not limited to tests, quizzes, whether taken electronically or on paper; projects, either individual or group; classroom presentations, and homework” (Student Handbook 2002-2003, p. 32). Students found in violation of this policy will be dropped from the class and a failing grade will appear on his/ her transcript.

### **Academic Freedom**

Each student is strongly encouraged to participate in class. In any classroom situation that includes discussion and critical thinking, there are bound to be many different viewpoints. These differences enhance the learning experience and create an atmosphere where students and instructors alike will be encouraged to think and learn. On sensitive and volatile topics, students may sometimes disagree not only with each other but also with the instructor. It is expected that faculty and students will respect the views of others when expressed in classroom discussions.

### **Student Discipline**

Everyone is expected and required to act in a scholarly, courteous, and appropriate manner during class. Inappropriate actions, behaviors, or remarks will not be tolerated and are grounds for removal from the class. Food and drink are never to be consumed near the computers.

### **OSD Statement**

“Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office of Students with Disabilities on the campus where they expect to take the majority of their classes. Students are encouraged to do this three weeks before the start of the semester” (Student Handbook, 2002-2003, p. 14).

### **Other Helpful Websites**

<http://www.austincc.edu/marketng/handbook/> (Student Handbook)

[http://www.austincc.edu/resources\\_students/services.php](http://www.austincc.edu/resources_students/services.php) (Student Services)

### **SCANS (Secretary’s Commission on Achieving Necessary Skills)**

A high performance workplace requires workers to not only have basic literacy, math, and personal skills, but also specific *competencies* – including the ability to manage resources, work well with others, research and process information, master complex systems and a variety of technologies. This list summarizes the SCANS skills and competencies addressed in this course.

#### **1 Resources**

- 1.1 [Manages Time](#)
- 1.2 NA
- 1.3 NA
- 1.4 NA

#### **2 Interpersonal**

- 2.1 NA
- 2.2 NA
- 2.3 NA
- 2.4 NA
- 2.5 NA
- 2.6 NA

#### **Information**

- 2.7 [Acquires and Evaluates Information](#)
- 2.8 [Organizes and Maintains Information](#)
- 2.9 [Uses Computers to Process Information](#)

#### **3 Systems**

- 3.1 [Understands Systems](#)
- 3.2 [Monitors and Corrects Performance](#)
- 3.3 [Improves and Designs Systems](#)

#### **4 Technology**

- 4.1 [Selects Technology](#)
- 4.2 [Applies Technology to Task](#)
- 4.3 [Maintains and Troubleshoots Technology](#)

#### **5 Basic Skills**

- 5.1 [Reading](#)
- 5.2 [Writing](#)
- 5.3 [Arithmetic](#)
- 5.4 [Mathematics](#)
- 5.5 [Listening](#)
- 5.6 [Speaking](#)

#### **6 Thinking Skills**

- 6.1 [Creative Thinking](#)

- 6.2 Decision Making
- 6.3 Problem Solving
- 6.4 Mental Visualization
- 6.5 Knowing How to Learn
- 6.6 Reasoning
- 7 **Personal Qualities**
  - 7.1 Responsibility
  - 7.2 Self-Esteem
  - 7.3 Sociability
  - 7.4 Self-Management
  - 7.5 Integrity/Honesty

Please go to <http://www.austincc.edu/mkt/scans.htm#whatis> for a complete definition and explanation of SCANS.

## **Video Game Development Program Philosophy**

The Video Game Development Program has been designed, developed and implemented in partnership with leading video games studio managers and directors in Austin. The video games industry has undergone significant changes in how games are developed. They are rarely developed by a few persons working in isolation. Today's games are often developed by teams of 50 to 200 on schedules from 2 to 3 years with budgets of \$10M to \$20M. The large publishers drive the game development funding and schedules. Consequently, it is critical that personnel in the industry communicate and collaborate effectively.

This drove the certificate requirements definition. Students are required to successfully complete courses in four categories:

1. The base industry courses: Video Games Industry, Business of Video Games and Video Games Development.
  - a. Students will understand what drives the industry, why games are developed, what is needed for success and how to get from idea to delivery.
2. The course specialization courses: Video Game Programming, Video Game Art, Video Game Design and Video Game Production.
  - a. Students will understand the requirements, objectives, limitations and goals of the different disciplines in a studio. This is essential for communication and collaboration.
  - b. Students in these core courses will be cross-discipline in order to build an understanding and appreciation of how different discipline teams collaborate and contribute to the final product.
3. The five specialization electives.
  - a. Students will develop skills in the discipline in which the student will seek employment.
4. Non-specialization electives
  - a. These are different per discipline, but will give you a deeper understanding of what other disciplines do and how they function. The goal is to help you understand how to work with others on the team and

to get the ‘big picture.’

5. Capstone Project

- a. This multi-person team project will simulate the real video game development environment. Students will develop a concept, turn it into a design, implement the programming and art required and produce it on the committed schedule. Go/no go milestones and final “publisher” acceptance reviews will mimic the industry. The students will have a deliverable for their portfolio that can be used for employment purposes.

Throughout the program each course will focus on knowledge transfer, skill building and teamwork. There will be a heavy emphasis on projects that will broaden and deepen each student’s portfolio development. Portfolios are critical to demonstrating an individual’s capabilities. Some projects will individual, many will be team based. How much a student gets out of each course will largely be determined by how much the students puts into the course. Video game development is highly complex, difficult work. The courses are designed to prepare students for that environment. So, come expecting to work hard.

The program is designed to reinforce key concepts such as teamwork, collaboration, and cooperation across all disciplines in the games development and management process. Many concepts are repeated throughout the program because they are extremely important to successful game development.