Advanced 3D Modeling, Animation and Special Effects
ITP 305x (3 Units)

Objective The purpose of this course is to extend techniques and builds upon theories introduced in the beginning animation course (itp215). This course provides the foundation for advanced animation construction, incorporation of and integration with external media, and techniques to automate and optimize development processes.

Concepts In this course, students build upon fundamental techniques to create professional quality imagery and motion. Students learn advanced modeling techniques such as NURBS modeling, advanced surfacing techniques such as specularity and sequenced mapping, and advanced animation and special effects including controllers, effectors, dynamics, and multiple emitters. In addition, students will be introduced to productivity and optimization techniques such as scripting and expressions. Students will also be introduced to a variety of compositing methods.

Prerequisite ITP215 or ARCH207a or ARCH407, and knowledge of PhotoShop

Lecture 3 hrs/week

Textbook
1. *Maxscript and the SDK for 3D Studio Max*. Bicalho. ASIN 0782127940. Publisher: Sybex.
2. *Inside 3D Max 4*. Kim Lee. ISBN 0735710945. Publisher: New Riders Publishing

Grading The following point structure will be used in determining the grade for the course. Final grade will be based upon the total points received, the highest total in the class, and the average of the class.

Mapping Project	50
Dynamics Project	60
Scripting and Expressions Project	70
Scripting and Expressions Exam	60
Final Project Story Board	10
Final Project	150
TOTAL POSSIBLE	400

Policies

Make-up policy for exams: To make up for a missed exam, the student must provide a satisfactory reason (as determined by the instructor) along with proper documentation. Make-up exams are only allowed under extraordinary circumstances.

Projects: It is the student's responsibility to turn in lab projects on or before deadlines as set by the instructor.

Late Projects: Rules for late project submission will be established by the instructor.

Academic Integrity

- The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tension accompanying examinations. When the instructor determines a violation has occurred, appropriate action, as determined by the instructor, will be taken.

- Though working together is encouraged, the projects must be your own effort. "Duplicate" projects will all receive zero points and possible referral to the Office for Student Conduct.

- All students should read, understand and abide by the University Student Conduct Code http://www.usc.edu/dept/publications/SCAMPUS/governance/gov03.html

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 the letter is delivered to me (or to your TA) 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.

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Course Outline

Week 1 – Introduction and course overview

- Introduction to advanced modeling techniques and discussion of course expectations, projects, and exams.

Week 2 – Advanced Mapping: Material Maps

- Creating external maps
- Map Types
- Sequencing maps

Reading: Inside 3D Max 4: Part 5

Week 3 – Advanced Mapping: Projection Maps

- Developing and applying projection map
- Combining projection and materials maps

Reading: 3D Max Magic: materials chapter
Project: Inside 3D Max 4: Part 5

Week 4 – Dynamics

- Introduction to dynamic environments
- Incorporating active and passive objects

Reading: Handouts

Week 5 – Dynamics (cont'd)

- Dynamic surfaces & textures
- Particle dynamics

Reading: Handouts
Project: Dynamics Project (due week 7)

Week 6 – Effectors and Controllers

- Automating object interactions
- Automating object properties

Reading: Maxscript: chapter 1

Week 7– Expressions and Scripting

- Automating animations
- Automating procedures and object creation

Reading: Maxscript: chapter 2

Week 8 – Scripting (cont'd)

Reading: Maxscript: chapters 3 and 4
Project: Scripting and Expressions Project (due week 10)

Week 9 – Video Post
- Compositing within Video Post
- Special Effects (i.e., glows, nebulae, depth of field)

Reading: Handouts
Project: FINAL PROJECT ANNOUNCED

Week 10 – Compositing
- Surfacing and background issues
- Outputting with alpha channels
- Compositing with non-linear editors

Reading: Inside 3D Max 4: Part 8

Week 11 – Compositing (cont'd)
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Reading: Inside 3D Max 4: Part 8
Project: FINAL PROJECT STORYBOARD DUE
Scripting and Expressions Exam

Week 12 – Patch Modeling and NURBS Modeling
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Reading: Inside 3D Max 4: Part 3

Week 13 – NURBS Modeling (cont'd)
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Reading: Inside 3D Max 4: Part 3

Week 14 – Advanced particle systems
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Reading: Inside 3D Max 4: chapter 21

Week 15 – Character Animation
Reading: Inside 3D Max 4: Part 6
Maxscript: chapter 7

Week 16 – Final project presentations and critiques