COURSE OUTLINE

GAME 230 3D Modeling and Texturing for Games

Prepared By: Qi Zhang
A. **TITLE**: 3D Modeling and Texturing for Games

B. **COURSE NUMBER**: GAME 230

C. **CREDIT HOURS**: 3

D. **WRITING INTENSIVE COURSE**: No

E. **COURSE LENGTH**: 15 weeks

F. **SEMESTER(S) OFFERED**: Spring

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY**:

   2 one-hour lectures, 1 two-hour recitation per week

H. **CATALOG DESCRIPTION**:

   This course provides an introductory overview of the critical elements of digital figure modeling and texturing. The students will practice the learned 3D modeling and texturing knowledge, algorithms, and skills through finishing a final project.

I. **PRE-REQUISITES/CO-REQUISITES**:

   Pre-requisite – Game 210

J. **GOALS (STUDENT LEARNING OUTCOMES)**:

   By the end of this course, the student will be able to:

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   | a. Apply critical elements for digital figure modeling and texturing | 2. Crit. Thinking  
   | | 3. Prof. Competence |
   | b. Demonstrate comprehensive knowledge and hands-on skills of using proper algorithms for specific modeling | 2. Crit. Thinking  
   | | 3. Prof. Competence |
   | c. Apply proper graphic algorithms to specific texturing | 3. Prof. Competence |
   | d. Explore practical knowledge and experience of using MAYA’s Embedded Language (MEL) | 2. Crit. Thinking  
   | | 3. Prof. Competence |
   | **d. Apply principles and techniques of 3D modeling and texturing to a final project.** | 2. Crit. Thinking  
   | | 3. Prof. Competence |
K. **TEXTS:**


L. **REFERENCES:**


M. **EQUIPMENT:** PC Computer Lab with Alias MAYA (Autodesk), Adobe Photoshop, MudBox, and Softlmage, Visual Studio, and NVidia graphics hardware installed.

N. **GRADING METHOD:** A-F

O. **MEASUREMENT CRITERIA/METHODS:**

- Assignments
- Projects
- Exams
- Participation

P. **DETAILED COURSE OUTLINE:**

1. Introduction
   a. Introduction to high-level overview of 3D modeling, graphics, visualization, and texturing, as well as their applications in computer games
   b. Introduction to the Computer Lab and related graphics and visualization hardware and software
   c. Syllabus
2. Character development
   a. for games
   b. for animation
3. Critical elements of digital figure modeling
   a. Texturing
   b. Rigging
   c. Rendering
4. Algorithms used in modeling I:
   a. Smoothing, polygon decimation, vertex merging
5. Algorithms used in modeling II:
   a. Edge loops selections and edge loop inserts
6. Algorithms used in texturing I:
   a. Texturing mapping, cube mapping, and mipmap
7. Algorithms used in texturing I:
   a. Displacement mapping, environment mapping, and image analogy
8. MAYA's Embedded Language (MEL) I
9. MAYA's Embedded Language (MEL) II
10. Translate design concepts into physical modeling and digital representation
11. Introduce several complex computer graphics production software packages
12. Project introduction and proposal
13. Techniques for machinima projects
14. Game asset production pipeline
15. Final Project Due

Q. LABORATORY OUTLINE:

None