MASTER SYLLABUS

GAME 230 3D Modeling and Texturing for Games

Created by: Qi Zhang
Updated by: Kathleen Mahoney
A. **TITLE:** 3D Modeling and Texturing for Games

B. **COURSE NUMBER:** GAME 230

C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

   # Credit Hours: 3
   # Lecture Hours: 2 per week
   # Lab Hours: 1 per week
   Other: (1) two-hour recitation per week

   Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE:** No

E. **GER CATEGORY:**

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

G. **COURSE 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.

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

   a. Pre-requisite(s): Game 210
   b. Co-requisite(s): 
   c. Pre- or co-requisite(s):

I. **STUDENT LEARNING OUTCOMES:**

<table>
<thead>
<tr>
<th>II. Course Student Learning Outcome [SLO]</th>
<th>PSLO</th>
<th>GER</th>
<th>ISLO</th>
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<tbody>
<tr>
<td>a. Develop game projects using professional gaming software.</td>
<td>PSLO 6</td>
<td>5</td>
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<tr>
<td>Use the design process: Concept, Design, Prototype, Production, Testing and Revision to evaluate, and implement strategies to find a solution to a problem.</td>
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<td>b. Demonstrate proper design process procedures.</td>
<td>PSLO 6</td>
<td>5</td>
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<tr>
<td>Use the design process: Concept, Design, Prototype, Production, Testing and Revision to evaluate, and implement strategies to find a solution to a problem.</td>
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<td>c. Demonstrate proper testing and troubleshooting techniques.</td>
<td>PSLO 4</td>
<td>2 [IA]</td>
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<td>Recognize the underlying principles guiding the relevant visual, audio, interactive, and narrative aesthetics of an animation or a game</td>
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<td>d. Examine Current trends in game design</td>
<td>PSLO 5</td>
<td>2 [IA]</td>
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<td>Synthesize trends, theories, movements and advancements in technology in the development of new ideas.</td>
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<td>e. Apply gaming principles of narrative, dynamics and mechanics to a final project.</td>
<td>PSLO 8</td>
<td>5</td>
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<td>Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.</td>
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<td>KEY</td>
<td>Institutional Student Learning Outcomes [ISLO] 1–5</td>
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<tr>
<td>ISLO #</td>
<td>ISLO &amp; Subsets</td>
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</table>
| 1 | Communication Skills  
Oral [O], Written [W] |
| 2 | Critical Thinking  
Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS] |
| 3 | Foundational Skills  
Information Management [IM], Quantitative Lit./Reasoning [QTR] |
| 4 | Social Responsibility  
Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T] |
| 5 | Industry, Professional, Discipline Specific Knowledge and Skills |

**J. APPLIED LEARNING COMPONENT:**  
Yes___X___  No_______

**K. % TEXTS:**  


**L. % REFERENCES:**  

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

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

**O. % SUGGESTED 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