

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**



MASTER SYLLABUS

GAME 230 3D Modeling and Texturing for Games

**Created by: Qi Zhang
Updated by: Kathleen Mahoney**

**CANINO SCHOOL OF ENGINEERING TECHNOLOGY
DECISION SYSTEMS
FALL 2018**

- 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: 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:**

II. <u>Course Student Learning Outcome</u> <u>[SLO]</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a. Develop game projects using professional gaming software.	PSLO 6 Use the design process: Concept, Design, Prototype, Production, Testing and Revision to evaluate, and implement strategies to find a solution to a problem.		5
b. Demonstrate proper design process procedures.	PSLO 6 Use the design process: Concept, Design, Prototype, Production, Testing and Revision to evaluate, and implement strategies to find a solution to a problem.		5
c. Demonstrate proper testing and troubleshooting techniques.	PSLO 4 Recognize the underlying principles guiding the relevant visual, audio, interactive, and narrative aesthetics of an animation or a game		2 [IA]
d. Examine Current trends in game design	PSLO 5 Synthesize trends, theories, movements and advancements in technology in the development of new ideas.		2[IA]
e. Apply gaming principles of narrative, dynamics and mechanics to a final project.	PSLO 8 Demonstrate an understanding of recent principles of game design, including, programming, narrative, character and level design.		5

KEY	<u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	Industry, Professional, Discipline Specific Knowledge and Skills

J. **APPLIED LEARNING COMPONENT:** Yes X No

K. % **TEXTS:**

Maya for Games: Modeling and Texturing Techniques with Maya and Mudbox (1st Edition) by Michael Ingrassia (Author). Publisher: Focal Press; Pap/DVD edition (19 Nov. 2008). ISBN-13: 978-0240810645 ISBN-10: 0240810643

3D Modeling: 101: Introduction to Modeling & Texturing Paperback by John Norman Rose (Author): ISBN-10: 1469913461 ISBN-13: 978-1469913469

L. % **REFERENCES:**

Computer Graphics: From Pixels to Programmable Graphics Hardware (Chapman & Hall/CRC Computer Graphics, Geometric Modeling, and Animation Series) by Alexey Boreskov (Author), Evgeniy Shikin (Author). Publisher: Chapman and Hall/CRC (15 Nov. 2013). ISBN-10: 1439867305, ISBN-13: 978-1439867303

M. % **EQUIPMENT:**

L. % 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