

GAME 192: GAME MODELING & TEXTURING

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	3
Total Contact Hours:	108
Lecture Hours :	36
Lab Hours:	72
Hours Arranged:	0
Outside of Class Hours:	72
Total Student Learning Hours:	180
Prerequisite:	GAME 190 and GAME 191.
Strongly Recommended:	ART 150.
District General Education:	C1. Arts
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter

Catalog Course Description

An intermediate 3D modeling class focusing on low poly modeling and texture mapping for games. Topics include the basics of lighting an object, advanced Photoshop skills and presentation skills. This class will also take a look at emerging technologies that address texturing for game art. 36 lecture hours, 72 lab hours.

Course Objectives

- Apply the fundamental concepts of Poly Modeling for Game Simulation to create 3D models.
- Apply methods for UV unwrapping 3D props, vehicles, environments, and characters for use in Game Simulation and Animation.
- Classify the fundamental components and attributes of a tri/quad mesh or spline.
- Apply the understanding of proper topology and understand polygon count limitations and how it applies to game engines

Major Course Content

1. Three-Dimensional Space
2. Coordinate Systems
 - a. Global
 - b. Local
 - c. Polar
3. Surface Coordinates
 - a. Relative
 - b. Absolute
4. File Structure
 - a. Save Scene Type
 - b. Project Folder Set Up
 - c. Import & Export
5. File Types

- a. Saving
 - i. MB (Maya Binary)
 - ii. MA (Maya ASCII)
 - b. Importing
 - i. OBJ
 - ii. EPS
 - iii. FBX
 - iv. STL
 - v. Audio
 - c. Exporting
 - i. OBJ
 - ii. EPS
 - iii. FBX
 - iv. STL
 - v. DAE FBX Export
 - vi. Maya IFF
6. Material Maps & Shaders
 - a. Maps
 - i. Diffuse Maps
 - ii. Normal Maps
 - iii. Opacity/Alpha Maps
 - iv. Specular Maps
 - b. Shaders
 - i. PBS (Physically Based Shaders)
 - ii. Procedural Shaders
 7. Render Systems
 - a. Maya Software Renderer
 - b. Maya Hardware Renderer
 - c. Maya Vector
 - d. Arnold Renderer

Lab Content

Practicum Intermediate Modeling

1. Mesh Tools
 - a. Booleans
 - i. Union
 - ii. Difference
 - iii. Intersection
2. Edit Mesh
 - a. Collapse
 - b. Detach
 - c. Chamfer Vertices
 - d. Face Duplicate
 - e. Extract Face
 - f. Poke
3. Mesh Tools
 - a. Offset Edge Loops
 - b. Quad Draw Slide Edge

Practicum NURBS Modeling

1. Curves Tools
 - a. CV Curve Tools
 - b. EP Curves

- c. Bezier Curve Tool
- d. Pencil Curve Tool
- 2. Surfaces Tools
 - a. Loft
 - b. Planar
 - c. Revolve
 - d. Insert Isoprom
 - e. Attach
 - f. Stitch
 - g. Detach

Practicum UV's

- 1. UV mapping
 - a. UV Coordinates
 - b. Cut and Sew UV's
 - c. UV Sets
 - d. Unfold
 - e. Pelt Unwrapping UV
- 2. Unwrapping Surfaces
 - a. Relax Vertices
 - b. Normalize UV Sets
 - c. Smooth UV Sets
 - d. Maximize Texture Space

Practicum Cameras

- 1. Camera Types
 - a. Orthographic Cameras
 - i. Front
 - ii. Side
 - iii. Top
 - iv. Bottom
 - v. Back
 - b. Perspective Camera
- 2. Camera Tools
 - a. Tumble Tool
 - b. Dolly Tool
 - c. Zoom Tool
 - d. Tract Tool
 - e. 2D Pan/Zoom Tool
 - f. Roll Tool
- 3. Camera Control
 - a. Angle of View
 - b. Focal Length
 - c. Near Clip Plane
 - d. Far Clip Plane
 - e. Camera Aperture
 - f. Film Aspect Ratio

Practicum Basic Lighting Controls

- 1. Type
 - a. Spot
 - b. Ambient
 - c. Area

- d. Directional
- e. Sky Dome Light
- 2. Controls
 - a. Type
 - b. Color
 - c. Intensity
 - d. Decay Rate
 - e. Cone Angle
 - f. Penumbra Angle
 - g. Drop Off
- 3. Shadow Controls
 - a. Shadow Color
 - b. Depth Map
 - i. Resolution
 - ii. Filter Size
 - iii. Bias
 - iv. Fog Shadow Intensity
 - c. Raytraced
 - i. Light radius
 - ii. Shadow Rays
 - iii. Ray Depth limit

Suggested Reading Other Than Required Textbook

Online resources and techniques for Maya, Z Brush, Substance Painter/ Designer, other online research techniques

Examples of Required Writing Assignments

1 to 2 page paper on stylizing textures for game art.

Examples of Outside Assignments

Create low poly game art model, unwrap UV's, create original texture and apply to model

Instruction Type(s)

Lab, Lecture

IGETC Area 3: Arts and Humanities

3A. Fine Arts